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ABSTRACT

These hearings on the proper and improper use of drugs by athletes before the U.S. Senate Subcommittee to Investigate Juvenile Delinquency include testimonies by athletes, trainers, physicians, researchers, and representatives of national athletic associations; supplementary articles on drugs; extensive information on drugs used and abused by athletes; a glossary of drug-related terms; and a bibliography on drugs and their abuse. (LKP)

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PROPER AND IMPROPER USE OF DRUGS BY ATHLETES

HEARINGS

BEFORE THE

SUBCOMMITTEE TO
INVESTIGATE JUVENILE DELINQUENCY

OF THE

COMMITTEE ON THE JUDICIARY
UNITED STATES SENATE

NINETY-THIRD CONGRESS

FIRST SESSION

Pursuant to
S. Res. 56, Section 12

INVESTIGATION OF JUVENILE DELINQUENCY IN
THE UNITED STATES

INVESTIGATIVE HEARINGS ON THE PROPER AND IMPROPER
USE OF DRUGS BY ATHLETES

JUNE 18 AND JULY 12 AND 13, 1973

Printed for the use of the Committee on the Judiciary

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John M. Rector, *Deputy Chief Counsel*

Ms. Falco served as staff director and chief counsel to the subcommittee until her resignation on August 21, 1973.

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PROPER AND IMPROPER USE OF DRUGS BY ATHLETES

MONDAY, JUNE 18, 1973

U.S. SENATE,
SUBCOMMITTEE TO INVESTIGATE JUVENILE DELINQUENCY,
COMMITTEE ON THE JUDICIARY,
Washington, D.C.

The subcommittee (composed of Senators Bayh, Hart, Burdick, Kennedy, Cook, Hruska, Fong, and Mathias) met, pursuant to notice, at 10:15 a.m., in room 2228, Dirksen Senate Office Building, Senator Birch Bayh (chairman of the subcommittee) presiding.

Present: Senator Bayh.

Also present: Mathea Falco, staff director and chief counsel; John M. Rector, deputy chief counsel; Mary K. Jolly, editorial director and chief clerk; Nancy L. Smith, research director; B. Elizabeth Marten, secretary to staff director; Lance Ringel, assistant clerk; Catherine ven de Velde, secretary; Betty Webb, minority clerk; and Chuck Bruce, legislative assistant, Senator Hruska.

Senator BAYH. We will bring our hearings to order, this morning with a good morning to all of you who joined us.

Before calling on our witnesses today I would like to make a brief statement relative to the purpose of our hearings and the testimony we'll hear today and may hear at a later date.

We meet this morning to hear testimony on the proper and improper use of drugs in athletic competition and the related issue of the adequacy of current efforts to curb the improper use of drugs by athletes. We are particularly interested in these concerns as they pertain to college, high school, and amateur athletes, although, to be totally consistent, I think it is proper to pursue the use or abuse, as it may exist or not exist, in the professional ranks as well.

As chairman of the Juvenile Delinquency Subcommittee, I have been actively involved in exploring the nature and seriousness of the abuse of drugs, particularly those with legitimate medical uses; the extent to which legitimately produced drugs are diverted to illicit markets; and the adequacy of Federal controls on the production and distribution of these drugs, has been part of this committee's concern over the last 3 year.

Part of my responsibility as chairman is to see to it that drugs are distributed in accordance with Federal law, whether they are being dispensed or administered to a chronically ill patient, a clinically diagnosed hyperactive child, or an athelete, in order to enhance his or her performance.

As I look back over the last few years of work, it is a matter of some accomplishment to point out, that at our insistence amphetamines were finally placed under stricter controls; controls which I feel are consistent with proper medical use but protective of our communities that have been inundated through the efforts of illicit distributors.

We had testimony here in this room that—by users of amphetamines—that it was easier to get amphetamines—speed if you please—that it was to get a package of cigarettes.

Despite the opposition we faced early in our efforts to get amphetamines controlled and to get their production controlled—and our being told that this couldn't be done—it is fair to say it has been done and early reports show that last year, the first year of controls, we were able to limit the supply of amphetamines by 80 percent. Production went down 80 percent.

Similarly, through our hearings and legislative efforts it appears that we have induced the Bureau of Narcotics and Dangerous Drugs and the Food and Drug Administration to impose similar controls on the widely abused shorter acting barbiturates and other sedative-hypnotic drugs, such as methaqualone-quaalude and sopors.

During the course of previous hearings various individuals recommended that we assess the use of drugs by athletes, particularly the use of amphetamines, sedatives and anabolic steroids. Reports implicating athletes in the traffic and abuse of drugs are increasing. It proves, at least as far as some of the police reports are concerned, that they are not immune from the drug abuse epidemic confronting the Nation. However, reports that drugs are being used by competitors in the hopes of improving performance and gaining an artificial advantage are also increasing.

I want to say, as the chairman of the committee, I am not one who feels we should proceed to investigate any problem as a result of certain reports. We must not respond to hysteria. There have been far too many individuals, as well as legitimate interests, that have in the past been affected detrimentally by rumor and I am not looking at this problem as the result of rumor. I don't intend to be persuaded by rumor or hysteria. We are looking for the facts and frankly, the reason for these hearings this morning is that we don't know the facts. We have read certain reports in the press alleging that certain nameless individuals have done thus and so, and hopefully we can sort the wheat from the chaff and we can get on about solving the business of this serious problem.

I am particularly concerned about the ethical implications of claims that athletes, in the quest for victory, are turning to drugs rather than hard work, discipline, and commitment to honest competition. I believe that it is important to win, but that how the game is played is equally important.

I have been involved in a very minor degree in several different types of amateur athletics myself. I have never been very good, but I have always been very interested. I think this comes from the fact that I had the good fortune some 45 years ago to be born into a family of a father who was a rather significant amateur athlete himself. He coached three or four different sports and was an athletic director and director of physical education through one of our major school systems for the bulk of his some 80 years of life. He gave his life to athletic competition and honest, clean competition.

I recall almost from the day I first remembered hearing the words, him saying it is not whether you win or lose, but how you play the game. Well, Dad could convince me how you play the game is important, but he never convinced me it is not important to win. Hopefully you can combine both of those goals successfully. I think that is what athletics mean to most Americans. Hopefully if there are a few athletes who have forgotten this rule, we can, by example, show that they are only a few and that the great bulk of sportsmen and women, athletes if you please, in this country still believe that sports should be good, clean competition.

I cannot, at least, believe otherwise.

The subcommittee is interested in a number of issues relative to the use of drugs by athletes in a number of issues relative to the use of drugs. Just to name four or five:

1. The ethical considerations involved in the use of additive or nonrestorative drugs, including stimulants such as cocaine and amphetamines and others such as anabolic steroids.

2. An assessment of the extent of the use of these additive drugs by athletes.

3. Current policy, guidelines, and enforcement mechanisms relative to the improper use of drugs by athletes.

4. The nature and extent of current efforts to educate athletes, trainers, coaches and others regarding the proper and improper use of drugs.

5. Suggestions and recommendations to facilitate the proper use of drugs in athletic competitions.

None of us on the subcommittee profess to be experts.

Certainly, I as the chairman confess that I am not.

We will hear testimony from the representatives of national athletic associations, physicians, trainers, researchers, and athletes. These witnesses are uniquely qualified to provide expert testimony and insight on these very important issues.

We appreciate very much the fact that several very busy and interested individuals have taken of their time to help us explore the facts of this problem, which is a matter of increasing concern to a lot of week-end, at least, as well as avid sportsmen themselves.

At this point in the record I wish to insert the text of the Subcommittee's enabling resolution, S. Res. 56, section 12.

[The document was marked "Exhibit No. 1" and is as follows:]

[Exhibit No. 1]

[S. RES. 56, 93d Cong., 1st sess., Report No. 93–46]

Resolution authorizing additional expenditures by the Committee on the Judiciary for inquiries and investigations.

Resolved, That in holding hearings, reporting such hearings, and making investigations as authorized by sections 134(a) and 136 of the Legislative Reorganization Act of 1946, as amended, and in accordance with its jurisdiction under rule XXV of the Standing Rules of the Senate so far as applicable, the Committee on the Judiciary, or any subcommittee thereof, is authorized from

March 1, 1973, through February 28, 1974, for the purposes stated and within the limitations imposed by the following sections, in its discretion (1) to make expenditures from the contingent fund of the Senate, (2) to employ personnel, and (3) with the prior consent of the Government department or agency concerned and the Committee on Rules and Administration, to use on a reimbursable basis the services or personnel of any such department or agency.

SEC. 2. The Committee on the Judiciary, or any subcommittee thereof, is authorized from March 1, 1973, through February 28, 1974, to expend not to exceed $3,946,800 to examine, investigate, and make a complete study of any and all matters pertaining to each of the subjects set forth below in succeeding sections of this resolution, said funds to be allocated to the respective specific inquiries and to the procurement of the services of individual consultants or organizations thereof (as authorized by section 202 (i) of the Legislative Reorganization Act of 1946, as amended) in accordance with succeeding sections of this resolution.

SEC. 3. Not to exceed $377,800 shall be available for a study or investigation of administrative practice and procedure, of which amount not to exceed $3,000 may be expended for the procurement of individual consultants or organizations thereof.

SEC. 4. Not to exceed $767,000 shall be available for a study or investigation of antitrust and monopoly, of which amount not to exceed $10,000 may be expended for the procurement of individual consultants or organizations thereof.

SEC. 5. Not to exceed $239,700 shall be available for a study or investigation of constitutional amendments, of which amount not to exceed $12,000 may be expended for the procurement of individual consultants or organizations thereof.

SEC. 6. Not to exceed $299,900 shall be available for a study or investigation of constitutional rights, of which amount not to exceed $10,000 may be expended for the procurement of individual consultants or organizations thereof.

SEC. 7. Not to exceed $210,200 shall be available for a study or investigation of criminal laws and procedures.

SEC. 8. Not to exceed $14,500 shall be available for a study or investigation of Federal charters, holidays, and celebrations.

SEC. 9. Not to exceed $240,000 shall be available for a study or investigation of immigration and naturalization.

SEC. 10. Not to exceed $223,000 shall be available for a study or investigation of improvements in judicial machinery.

SEC. 11. Not to exceed $532,500 shall be available for a complete and continuing study and investigation of (1) the administration, operation, and enforcement of the Internal Security Act of 1950, as amended, (2) the administration, operation, and enforcement of other laws relating to espionage, sabotage, and the protection of the internal security of the United States, and (3) the extent, nature, and effect of subversive activities in the United States, its territories and possessions, including, but not limited to, espionage, sabotage, and infiltration by persons who are or may be under the domination of the foreign government or organization controlling the world Communist movement or any other movement seeking to overthrow the Government of the United States by force and violence or otherwise threatening the internal security of th United States. Of such $532,000, not to exceed $3,785 may be expended for the procurement of individual consultants or organizations thereof.

SEC. 12. Not to exceed $335,400 shall be available for a study or investigation of juvenile delinquency, of which amount not to exceed $14,000 may be expended for the procurement ofindividual consultants or organizations thereof.

SEC. 13. Not to exceed $143,000 shall be available for a study or investigation of patents, trademarks, and copyrights.

SEC. 14. Not to exceed $79,000 shall be available for a study or investigation of national penitentiaries, of which amount not to exceed $1,000 may be expended for the procurement of individual consultants or organizations thereof.

SEC. 15. Not to exceed $172,500 shall be available for a study or investigation of refugees and escapees, of which amount not to exceed $2,000 may be expended for the procurement of individual consultants or organizations thereof.

SEC. 16. Not to exceed $62,300 shall be available for a study or investigation of revision and codification.

SEC. 17. Not to exceed $250,000 shall be available for a study or investigation of separation of powers between the executive, judicial, and legislative branches of Government, of which amount not to exceed $10,000 bay be expended for the procurement of individual consultants or organizations thereof.

Sec. 18. The committee shall report its findings, together with such recommendations for legislation as it deems advisable with respect to each study or investigation for which expenditure is authorized by this resolution, to the Senate at the earliest practicable date, but not later than February 28, 1974.

Sec. 19. Expenses of the committee under this resolution shall be paid from the contingent fund of the Senate upon vouchers approved by the chairman of the committee.

Senator Bayh. Our first witness this morning is Mr. Donald L. Cooper, American Medical Association, Committee on Medical Aspects of Sports.

Dr. Cooper is the team physician at Oklahoma State University.

STATEMENT OF DONALD L. COOPER, M.D., AMERICAN MEDICAL ASSOCIATION COMMITTEE ON MEDICAL ASPECTS OF SPORTS, TEAM PHYSICIAN—OKLAHOMA STATE UNIVERSITY HOSPITAL AND CLINIC, STILLWATER, OKLA., ACCOMPANIED BY ROY S. BREDDER, MEMBER OF LEGISLATIVE DEPARTMENT

Dr. Cooper. Yes, sir.

Senator Bayh. My first personal experience with Oklahoma State was one with Oklahoma A. & M when I happened to find the young lady who was attending school in that fine institution, and after about 21 years of trying, I think we finally made a Hoosier out of her. We appreciate the fact you are here this morning.

Dr. Cooper. Thank you.

Mr. Chairman and members of the subcommittee, I am Donald L. Cooper, M.D., a general practitioner, presently serving as team physician at Oklahoma State University, Stillwater, Okla. I also serve as a member of the Committee on Medical Aspects of Sports of the American Medical Association. With me is Mr. Roy S. Bredder, a member of the AMA Legislative Department.

The American Medical Association welcomes this opportunity, in response to your invitation, to present its views on the use of drugs in athletics. Our association shares the strong concern of the committee, evidenced by its extensive hearings held to date, regarding the widespread abuse of drugs by youth in general. We have for some time been concerned, not only with the general widespread use of drugs by our youth, but also with the special use of drugs by our young athletes. We believe that your current hearings on the proper and improper use of drugs by athletes, focusing on high school and college age athletics, provide a timely exploration of this subject. We shall attempt to respond to the committee's stated interest in the use of drugs such as amphetamines and anabolic steroids, the extent of use of additive and restorative drugs, as well as in guidelines relative to the improper and proper use of drugs by athletes in athletic competition.

For the purposes of this discussion it should be kept in mind that drugs which may be the subject of abuse may also have proper therapeutic usage. Drug abuse in this conext, then, refers to the self-administration of drugs, without medical supervision and particularly in large doses. By contrast, therapeutic use refers to a drug with medicinal value administered by a physician to treat illness, injury, or deficiency. Drugs abused in athletics also have therapeutic value when used properly. They are abused when they are taken without a physician's advice and without informed medical judgment.

Senator BAYH. If I might interrupt, I appreciate the fact that you emphasize that aspect. I do think it is important for use to look at this particular type of drugs and how it is used and abused with that understanding. This is different from the heroin problem, to use one specific example, where you have an illicitly manufactured and distributed drug that has no medicinal purpose as contrasted to the other class of drugs that do have a very important recognized medicinal use. It is important to control this type of drug in such a way that we don't penalize the legitimate dispenser and user.

Dr. COOPER. Right.

I want to make it clear from the outset that drug abuse in athletics is not an isolated event but mirrors a widespread problem particularly among the youth of our communities.

A listing of drugs that athletes experiment with would be lengthy. The amphetamines and steroids, however, are the ones causing most concern. A synopsis of these two classes of abused drugs will illustrate the general nature of drug abuse among athletes.

AMPHETAMINES

Our first concern will be amphetamines, the so called pep pills.

This commttiee is well aware of recent actions taken to reduce the availability and use of amphetamines, which you spoke to in your introductory statement. The medical profession has strongly supported these restrictions, particularly in view of the limited therapeutic indications for such drugs. Amphetamines may be indicated medically, however, in selected instances such as the control of hyperkinstic behavioral disorders in children; and in the treatment of patients with narcolepsy—an uncommon disorder characterized by an uncontrollable desire to sleep.

There is, however, no valid reason for their use by athletes in athletic contests. Moreover, the National Association of Intercollegiate Athletics, the Amateur Athletic Union, the National Collegiate Athletic Association, the International Amateur Athletic Federation, and the International Olympic Committee have all condemned or banned the use of these drugs in athletics.

The position of the American Medical Association is also very clear on this matter—amphetamines have no place in athletics.

AMA concern with drugs in athletics dates at least to 1957. A resolution was introduced that year into the House of Delegates of the AMA alleging widespread abuse of amphetamines. An ad hoc committee on amphetamines and athletics was appointed by the AMA to undertake a survey. A sample of 800 high schools and colleges revealed that less than 1 percent of the athletes had abused drugs. The low drug abuse reported in this survey among athletes corresponded generally with the relatively low incidence of abuse in the youthful population at that time. No recent national surveys have been conducted on the extent of amphetamine abuse in athletics, but there is reason to believe that the incidence is higher, again corresponding with the higher use among students generally throughout the country.

As members of the youth subculture, athletes are encouraged through sometimes subtle social persuasion from their peers to consume drugs, quite distinct from reasons of taking them for a supposed advantage in sports. The athlete could conceivably start abusing amphetamines in high school and continue in college. His frequency and duration of drug abuse over that period would be substantial. His habits of abuse coupled with apparent easier accessibility of the drug and peer acceptance of drug abuse could develop into a behavior pattern difficult to eliminate even after his formal athletic career. The "National Survey of Student Data," conducted by the National Commission on Marihuana and Drug Abuse, indicates that drug abuse among the general student population has increased, and it is logical to expect that athletes as members of that subculture have also been influenced to abuse drugs more in recent years. Therefore, our impression is that athletic drug abuse has increased.

Because drugs such as amphetamines are not permitted in athletic events, concerted efforts have been made in recent years by the athletic community to control abuse. The prestige associated with winning at an international competition raises the incentive, even more than most athletic contests, to use any method to try to improve performance. As a result several procedures for control have been developed and used in international competitions.

A reliable scientific drug detection and monitoring program instituted in all athletic events would be expensive and time consuming. For instance, where urine is monitored, facilities and staff must be available to collect samples and to label, seal and code them properly. Most laboratories are geared only for determination of fairly large amounts of drugs, as in poisonings or suicides. Gas chromatography, electrophoresis, and crystallography can be used for analysis, but these must be well controlled.

When testing is to be done, it should be carried out on all participants. When only winners are tested, the implication arises that there is some relationship between winning and drug taking. In reality the opposite is found to be true. Where a drug detection system has been used it has generally been welcomed by the athletes because it assists them in resisting social pressure to use drugs.

Senator BAYH. Doctor, do you have any reports to substantiate what you just mentioned here; relative to the opposite being true?

Dr. COOPER. The studies that have been done; where there were tests taken on all of the participants in events, have been reported in the literature. There was one at Winnipeg in 1967 that tested all of the bicyclists and this showed up the number—and I think it was well in to the 60's or the 70's; cyclists entered—it wasn't until they got after the first six places that they began to show up as users of drugs. The same thing has been true in studies done in Italy and France where they have tested all of the participants in an event.

As I say, the first finishers, the winners, were not the ones using the drugs; it was the boys that apparently were looking for some type of supposed outside help or outside support for their benefit because they hadn't put in the training and conditioning necessary.

Senator BAYH. Let me ask the converse question because I think that probably is equally important and, that is, the seventh place finisher might have finished 17th. We don't know. Is there any proof to show that, by using drugs, whether you have a better chance of winning? I think that is an equally important question because a lot of people might be tempted to use drugs feeling that is going to get them the gold medal.

Do we have any evidence to show that using some of these various kinds of crutches really helps to get across the finish line earlier?

Dr. COOPER. This is where you have to go back to your own objective interpretation of the literature that is available. In my opinion, and in the opinion of most authorities, I talked to, there is no good scientific evidence to indicate that any drug can make anybody perform any better.

I think there are an awful lot of poorly done studies that would imply—well, one of the studies I am thinking of said the amphetamines would increase the performance by 1 to 4 percent, which is very minimal, a very minimal type of increase. Yet when the study was actually analyzed in a somewhat—I would say, in depth and in a critical fashion, you will find the measurements were very poorly controlled, the timings were poorly done, the athletic knowledge of the individuals running the tests was very, very minimal and so it was a very poor study.

So, if you get well-done studies where they were double blind, that is, the participants and the investigator, neither one knew what was the active drug being used, there is no evidence to this.

In fact, with a placebo, the effect is so marked it is just about as good. In other words, if you tell someone they are taking something that is good and is going to increase their performance, they will be just as good if you give them the amphetamines.

Senator BAYH. You will pardon by smiling. You may have noticed I limped in here, which is the result of a sprained ankle that I got this weekend, Saturday, playing with a friend which I taped up to meet a challenge match in which my son and I were meeting another father and son. So what you are telling me is, if I had a pill to help me, I couldn't have done any better than I did yesterday during that father and son match?

Dr. COOPER. There is no evidence to indicate you can increase your ability to perform, no.

Senator BAYH. My own ability can't then be increased by either a shot or pop?

Dr. COOPER. I think you have to come back to this basis——

Senator BAYH. Oh, well, let's not go too far into this personal note of my own talent in sports.

Dr. COOPER. There are conflicting reports in the literature as to the possible minimal benefits of amphetamines in enhancing performance. When I search the cumulative index and start pulling out papers, no substantial finding conflicts with this. And in the positive sense, amphetamines provide only a minimal benefit in enhancing the performance.

But it is our opinion that valid scientific evidence does not show improvement in performance. Some show actual impairment of certain skills. I think that is important to indicate. It oftentimes will have a paradoxical effect so that what the individual is taking to help himself may have a detrimental effect and they will be harming themselves in terms of their performance. But even if it were found that such drugs enhanced performance, there would remain, among others, the question concerning the priority of such use within the spirit of amateur athletics.

Moreover, the detrimental effects of continued amphetamine abuse are substantial. It is stated in AMA Drug Evaluations that overdosage may cause nausea, vomiting, ratching, cardiac irregularities, or convulsions, and that delayed psychotic reactions characterized by euphoria, agitation, confusion, and visual hallucinations have occurred. The Council on Mental Health at the AMA has said:

> Abuse of these substances arises from and is paratuated solely by psychic needs to overcome depression or fatigue or to attain the auphoric and excitatory effects associated with the drugs.

Clearly there is a substantial health risk involved in amphetamine abuse.

ANDROGENIC-ANABOLIC STEROIDS

Synthetic anabolic steroids were originally developed to simulate the body-building action of natural androgens. Androgen is any substance that possesses masculinizing actions. Testosterone, the male sex hormone, is the most potent androgen. It is a primary factor in growth and development of male secondary sexual characteristics. The development of a synthetic staroid that could retain the anabolic growth effects of testosterone without the associated sexual changes would be an important medical advancement. There is no pure anabolic steroid or agent without the androgenic effects. In proper dosage, these drugs can benefit some carefully selected children, boys and girls, with growth disorders, and they are used in debilitative diseases of both men and women. Thus they have a valid medicinal value when treating certain deficiency disorders. They have no role where normal metabolism exists.

The extent of abuse of anabolic steroids in sports is unknown. While no national surveys have been conducted to assess it, it is believed by many team physicians that their abuse has increased in recent years. Unlike amphetamines, there are no analogous data available from a survey of the general student population. Anabolic steroids have such a specific purpose that their abuse is confined much more to the athletic community. In athletics, anabolic steroids are used largely by weight lifters, shot putters, discus throwers, javelin throwers, wrestlers and football players in an attempt to increase body size or strength. The suspected increase in abuse may again reflect the current liberal position of the youthful community to drug abuse practices.

The issues of whether these drugs enhance strength or athletic performance in athletic competition is purely academic. Their use by athletes is banned by all amateur athletic codes and there is no therapeutic reason to justify their use by a healthy athlete. Nevertheless, the use of anabolic steroids presents a complicated problem. The human body has many known steroids, and the total interrelated action of all these and other hormones is not fully understood. When a steroid drug is introduced or given to a normal individual, it can cause profound metabolic imbalances. The problem is further compounded by the fact that many athletes in their zeal will take 5, 10 or 15 times the normal dose recommended by the manufacturers or the pharmacologists. No one to my knowledge has done research with these massive doses, and the human damage that could result is unknown. One study was unable to demonstrate any increased strength, motor performance, vital capacity, and physical work capacity. This was a good, scientific investigation that used normal dosages of androgenic-anabolic steroids. There was some weight gain, but most of this was believed to be due to fluid retention, which is a common finding with the use of steroids in humans, and caused by sodium retention from altered electrolyte balance. Another study also documented the inability of anabolic steroids to increase effective weight or strength among normal persons. Where other studies seemed to show a gain in strength and size, they were in general not of the double blind type and this fact made it difficult to evaluate the psychological input. The placebo effect must be controlled as it has recently been shown that dramatic improvements in strength were recorded when subjects were told they would be given anabolic steroids even when they were not.

There are real dangers to youths using anabolic steroids. The possibilities of the premature development of male secondary sexual characteristics in young boys, virilization in females, and accelerated bone maturation of both sexes are definite risks. The accelerated bone maturation means premature closure of the epiphses or growing plates in long bones. In other words, a youth may close his epiphyses prematurely and never become the height and size of which he is capable.

Besides these effects, anabolic steroid use by normal men has been associated with testicular atrophy, loss of libido, and on rare occasions, in size of the prostate gland. If a young person has a hormone sensitive tumor, the increased amount of steroid may spur it on to more rapid and dangerous growth. Inflammation of the liver has been reported as it apparently cannot metabolize all of the extra steroid hormone. This is a chemical hepatitis.

PREVENTION AND CONTROL

There has been a concerted effort by the sports medicine community to restore a meaningful perspective to the medical uses of drugs in athletics. When the AMA Committee on the Medical Aspects of Sports first alerted the athletic community to amphetamine abuse in 1959, it also voiced active opposition to any use of drugs by athletes for the purpose of supposedly enhancing athletic performance. In 1965 the committee again strongly advised that the giving of anabolic steroids to healthy athletes had no medical justification.

As recently as June 1972, the House of Delegates of the AMA reiterated an unequivocal statement by the Association that amphetamine and anabolic steroid drugs have no medical purpose in athletics. Throughout this whole period, the committee has utilized various communication media in a continuing effort to educate athletes, coaches, athletic trainers, and team physicians concerning the health hazards involved in the abuse of these drugs. But the multiplicity of drug abuse patterns among youth demand diverse educational strategies. Drug abuse prevention among athletes requires approaches similar to those for any other group. Even though drug detection procedures are necessary, drug education related to prevention is more important.

Senator BAYH. Before you leave that point, may I ask you to make very clear what the AMA position is on this.

Could you tell us what steps they have taken as a professional organization to convey this expression of concern to their members? Have any steps been taken to punish physicians who may have transgressed this prohibition against the use of these drugs? Are there any specific examples of physicians who have been reprimanded or punished by the AMA as a result of misusing this particular type of drug, which the Association says has no relevancy in this area?

Dr. COOPER. As far as the methods used, again I would refer to what we call publications of the AMA, that is, this [indicating].

Of course, here is a lengthy list of the publications of the AMA [indicating] but as far as tips on athletic training, each year the AMA sponsors a national conference on the medical aspects of sports and for the last several years on the program—and I have copies of the various programs starting back to the 12th, 13th and 14th national conferences on the medical aspects of sports—we have had presentations and discussions on these very subjects and speaking to the specific point of not using these drugs in ethical medical practice.

Of course, the AMA has a publication called Drug Dependency Guide for Physicians, and we also have a booklet out called "The Fundamentals of Athletic Training." Now, these are promoted as educational pieces and, of course, they are getting and trying to get stories into the various wire services in regard to this area.

As to the specific, I guess you would call it policing, I am not familiar with any specific cases of any physicians that I know of. Our legal counsel may be able to advise me on this. Have there been any specific cases?

Mr. BREDDER. I am not aware of any specifics. I would point out the AMA itself is really not capable of doing anything to a physician in terms of taking away his license or things of this nature. I think our effort is in the educational activity of physicians who might be abusing this particular drug perhaps and also through his fellow physicians in the community or perhaps State licensing boards. They may have some effect, but we ourselves don't have any power to do something of this nature.

Senator BAYH. Well, before proceeding along this line of questioning, and maybe since I opened it up, we ought to go ahead and finish this particular line of questioning. I apologize for interrupting your statement.

First, let's make absolutely certain what we are talking about. In my judgment we are talking about a very, very small percentage of physicians, if any, and we are talking about, I think—and I hope we will find—a very small percentage of athletes if any.

And I don't know why it is—whether it is those in charge of managing a professional sports organization or I suppose a medical association or whatever it might me—but whenever there is any effort made to try to study these misdeeds of a few, that suddenly those in charge start calling my office or feeling that the whole profession is going to be besmirched, which seems to me not to be true. The converse is true. If we can find a rotten apple or two, it is better to admit that it is bad.

Now, your profession has gone on record repeatedly about what you do believe—and I'm sure professional sports are in the same category, that is, nobody who manages a professional team and certainly a league condones this kind of thing—and you have gone on record against it. I personally feel that all athletics accept an athletic code. Most would profit by our getting it out in the open and saying, all right, there is an example here of this abuse and we are not going to let it happen in the future.

Mr. Bredder has been kind enough to testify and help us in previous testimony when we were pursuing the rescheduling problem. It is good to see him again.

It is fair to say that the American Medical Association would have some influence on State societies and State licensing boards if they were to use their influence to point out certain transgressions; is that not a fair assessment?

Mr. BREDDER. I would think so, yes.

Senator BAYH. Now, this is a new field, you know, so I am not being critical, but since we are talking about a few, have you had any examples of, say, a team psysician who for some reason or other is using—dispensing these drugs which the Association feels have no reasonable use in this area?

Have you had any example brought to your attention?

Dr. COOPER. I am not aware of any.

Senator BAYH. I am not talking about the whole profession now. I am talking about one or two.

Dr. COOPER. At this time I am not aware of any physicians who are prescribing either of these substances, as a team physician.

Senator BAYH. This would apply to amateur athletics as well as professional athletics?

Dr. COOPER. I am not familiar in the area of professional athletics. I would not pretend to speak for that area. I am talking about amateur athletics at the collegiate and high school level.

Senator BAYH. This applies to steroids as well as amphetamines?

Dr. COOPER. It would have to apply to steroids as far as my personal knowledge is concerned, yes.

Senator BAYH. You are familiar with the court cases involving the San Diego Chargers. I believe these allegations relate to the late sixties. There were a couple of court cases alleging abuse. Depositions were taken.

Dr. COOPER. This was the team physician for the professional team?

Senator BAYH. Yes.

Dr. COOPER. Yes; I am only familiar with what I read in the newspaper about it.

Senator BAYH. Where does one attack the problem, if you have a situation where the team physician prescribes drugs for a team as a whole and then the trainer dispenses them across the board?

That certainly would be unethical and probably illegal; would it not?

Dr. COOPER. I am not familiar with any such case, but I would have to have more specifics.

Senator BAYH. This goes back to the previously mentioned case where the physician and the trainer testified that the physician prescribed drugs for the team and then the trainer dispensed and distributed them.

Dr. COOPER. I think this would be a highly questionable practice in my opinion and I think it would be wrong.

Senator BAYH. I think we could go a little bit further than that; couldn't we?

Dr. COOPER. As I say, I am not familiar with the details, other than just in general, of what you are talking about. You haven't mentioned any specific drugs.

Senator BAYH. I am talking about amphetamines and steroids.

Dr. COOPER. I am not really familiar with any place where that has occurred. As I say, if this is what happened with the professional team——

Senator BAYH. I don't know whether it occurred or not either, all we have is testimony to the effect it did occur some time ago so I think we can talk about it without in any way alleging misdeeds. I understand that the management of the Chargers has changed since then.

I don't know the truth or veracity of the allegations that were made either. But looking at a specific example, is it fair to say unless we are talking about some communicable disease where the whole team needs to be treated, there is no validity in issuing a prescription for amphetamines to a whole team?

Dr. COOPER. There is no validity to issuing it to one person let alone the whole team.

Senator BAYH. Well, thank you.

Dr. COOPER. Success in ameliorating the total drug problem requires the concerted efforts of agencies representing all segments of the community—law enforcement, education, religion, industry, business, medicine, along with parents and most important, the youths themselves. Many communities have been able to provide prevention, rehabilitation, and understanding through the synergistic action of everyone in the community. They have found that a shotgun approach to drug abuse prevention with facts alone about drugs does little to discourage abuse.

I think the most promising trends in mounting successful programs have included a reexamination of relationships between people as well as assistance to help them learn and use accurate information to humanize education. This course is superior to placing the emphasis on the acquisition of knowledge. Whereas many of the original programs were oriented towards the drugs, more promising programs focus on the individual. The abuse of a drug is usually only an external manifestation of a problem, and is an indication of the individual's value system.

In athletics, a discussion of values must include a reconsideration of the purpose of sports programs. These considerations may lead to modifications of a system that frequently only rewards the winner, and with little regard for individual athletes. Such limited programs restrict the health, education, and recreational benefits of athletics. The lack of regard for the individual, in addition to game pressure, may well be factors in encouraging drug abuse among athletes.

Since the athlete is like any other youth, as pointed out, general prevention is necessary. New ways are needed for health educators to deal with the total family unit. Parents exert substantial influence on their children through their own unconscious behaviors. Providing an orderly growth and development for young children through aiding families and improving environmental influences holds the greatest promise of success in combating drug abuse among youths, including athletes.

THERAPEUTIC USE OF DRUGS

This is another area. This is in counterdistinction of what we were talking about.

Therapeutic use of drugs to relieve pain is a second broad category of drug use of interest to this subcommittee. Perhaps a reminder is in order that the therapeutic use of drugs to treat disease or injury and relieve symptoms should not be confused with use of drugs taken solely for a supposed advantage in sports.

The class of drugs referred to here represents local anesthetics (e.g. Novocaine), analgesics (e.g. aspirin and narcotics), and anti-inflammatory agents (e.g. cortisons). The first two groups are often referred to in lay terms as "pain killers."

The local anesthetics can be injected directly into a damaged tissue to produce almost instant pain relief. The analgesic drugs can be taken orally or by injection, to produce a reduced consciousness of pain. An enumeration of all these agents would be extremely lengthy and serve no useful purpose. Such a list would contain all the medications in these classes which are prescribed for the general population.

We should remember that in the medical care of athletes, as with other patients, consideration must be given to the whole individual. Medical judgments often include psychological or social considerations relating to the total well-being of the individual.

Of course the primary consideration entering into a physician's decision concerning whether an athlete should play again immediately following medication to reduce pain is the location and severity of the injury and the extent of risk of further damage. Of formost concern is the general health and well-being of the athlete, and nowhere do we imply that there is an attempt to gain an athletic advantage through such required medical treatment.

This raises the issue of participation by athletes handicapped by an illness, such as asthma, or diabetes or epilepsy, and who can only compete with the aid of medication. These athletes are to be commended for overcoming tremendous physical handicaps in achieving the athletic success that they do. Many amateur athletic associations may have to re-evaluate their stringent rulings in this regard to encourage such individuals to participate.

From this discussion, I am sure it is apparent that reaching a judgment in sports medicine is perhaps more complex in some ways than it is in the ordinary practice of medicine. Mr. Chairman, I will conclude here, and will attempt to answer any questions you might have.

Senator BAYH. Doctor, this is a very thoughtful and comprehensive statement. I do have some questions I would like to ask you, to expand on your comments. I suppose one of the most critical and yet difficult decisions involves your closing reference to the use of certain types of drugs to ease the pain and thus let an athlete continue to participate.

Frankly, I have always thought and do feel that it is an act of courage if a person has a painful injury where their competitive spirit is such that it drive him on to compete in spite of the pain. So where do you draw the line? Who makes that decision whether competing, absent the paint because of temporary relief, is injuring that athlete? How do you apply a standard? I noticed a study showed that most State laws prohibit the use of pain killers, of pain killing drugs, on horses, within 48 hours of a race yet we go ahead and let human beings have the advantage if you want to call it an advantage of this particular type of drug to drive them on to compete. Where do you draw the line? You set one standard for horses and another for adults, apparently.

Dr. COOPER. Well, I think there are some very obvious differences between the horses and the humans.

Senator BAYH. That is a very profound statement.

Dr. COOPER. As I say, horses don't bet on humans and they are pretty smart for not doing so.

It is a very difficult problem. This is one of the areas where what we call the art of medicine and the art of experience and the art of being in a situation numerous times as a team physician and in a sense as an athletic trainer, comes in. I don't know any way you can avoid playing with some pain when you play a competitive contact sport. I think there is a wide variation of individuals that will have what we call different pain thresholds. It is difficult really to judge.

I was recently advised of a young man, who is known to you, and goes to school with your son at St. Albans and who was in a wrestling tournament in early Spring. In the workouts before the tournament even began he cracked or fractured—it was not a complete fracture—but he fractured his right clavicle. It gave him pain. The coach said if it bothers you this much you don't have to participate but he said no, he would. And he wrestled five different opponents. Apparently he has a high threshold for pain.

He lost the final match to a much older and experienced wrestler. It wasn't known until 2 days later when he went to the doctor that he had sustained in the initial injury sometime back this fracture of the clavicle, but even so he wrestled five matches with a cracked clavicle.

So we see many individuals with painful conditions that are treated by these substances. I myself have used it on numerous cases, for example, where a boy has a—what we call a hip pointer. I don't know if you ever heard of a hip pointer but it is a very minor injury in regard to any seriousness in regard to future activities or future longevity or any other perameter you want to measure it by, but it is a very discomforting injury because every time you cough or sneeze or try to laugh it causes pain. By injecting this, you relieve the individual of his pain and he can be more comfortable in ordinary living.

We have the same treatment, not exclusively for the athletes, but for the college student who falls down the stairs and gets a hip pointer. We do this for him too. Once it clears, you can stop treatment.

So I think you have to take each individual individually. As I said, it is very difficult to set hard and fast standards. But your question was where do you draw the line? What may be the line for one man may be completely different for another. There are people who think that these substances should never be used under any conditions for anybody. They are what I call hard hearted in a way because they have never had the injury themselves. But there are physicians who believe that. And that is an easy way to do it in the sense of it being a copout to the athlete because, you know, for an athlete who has worked for many years—and many of them do—and they strive and go through great amounts of devotion of time and effort and injuries and they want to be able to compete, and I think they have the right to compete under what I would say "none-severe risk-taking behavior" in the sense that the guy has a right to compete as an athlete because of all the time he has devoted to this. And if there is any way he can be oable to compete that is relatively safe to him, we should help him.

Senator BAYH. With the emphasis on it being relatively safe?

Dr. COOPER. This is a tough judgment to make.

Senator BAYH. If you as the team physician had known that the clavicle had a parallel fracture how would you have decided that particular case?

Dr. COOPER. In that particular instance I would not allow him to have wrestled anybody had I known it ahead of time.

Senator BAYH. Do we have any specific examples—in your knowledge—as to the use or abuse of amphetamines in athletics, any examples where it has been linked with serious injury or fatalities?

Dr. COOPER. There are reports in the literature; yes, in fact I think you will find in the 1960 Olympics there was a cyclist, a Belgian cyclist, where this happened. I think you will find in some of the various European experiences occurences of this. I could go back through the literature and give you specific references.

But there have been deaths. What happens in these situations apparently is the individual, what was his, I guess you would say, central nervous system excited state does not recognize or they are not aware of the normal signs and symptoms of fatigue and signs of exhaustion and they continue to go on to the point of heat buildup and go into what we call a circulatory collapse. There are deaths associated with amphetamine usage in these long-endurance events.

Senator BAYH. You refer to urinalysis in international competition. As someone who has been involved in amateur athletics as a team physician in this country, what are your thoughts on the advisability of using that kind of a system in American amateur athletics and professional athletics?

Dr. Cooper. It is relatively expensive to do and it is somewhat complicated to do. I don't think there is any question of the impact that it has on the international competitors in terms of their more discriminatory use of substances.

I think you get into the very complicated area of saying which drugs are to be banned.

Some individuals have banned ephedrine, which is the most commonly used drug for the treatment of asthma, and yet isoprotereno 4 hydrochloride, which is a commonly used drug, has not been banned.

There is no evidence I know of anywhere in the literature that would validate it would increase the ability to perform any type of athletic contest.

So I don't think there is any question of the efficiency of a sophisticated laboratory process that could be done now. It is just relatively expensive. It would be very awkward to perform such a test on every contest. There may be some way they could set up random sampling, but I thnik if you are going to do random sampling, you better do it on everybody who is participating. This is one thing I object to where in certain areas of international testing, for example in 1971 when they had the world weight lifting championships in Columbia, Ohio they tested the winners. They tested the first and second and third finishers and found all of them using amphetamines. So they took the first, second, and third medals away and awarded them to the fourth, fifth and sixth winners without any testing on them, thereby implying that the drugs had something to do with these people winning in this instance. And I think they would have done better to have tested everybody or not tested anybody at all.

Senator Bayh. How in the world could anybody apply a test to only the top three? My information was that in this particular instance, there were nine top medalists involved——

Dr. Cooper. Well, that was different weights, Senator.

Senator Bayh. Across different weights?

How could you apply that test to the top contestants and not apply it across the board?

Dr. Cooper. I don't know who made that administrative decision. I think it was a very bad one though.

Senator Bayh. Well, Doctor. I won't delay you further. We may have some supplemental questions we would like you to answer in writing.

But it is your position as the result of significant experience as a trainer, as a physician, as an advisor to trainers, that there is nothing to be gained by the use of these stimulative drugs and that the administration of these drugs to relieve pain and thus permit participation should be confined to those areas where it will not damage the athlete involved?

Dr. Cooper. Yes sir.

Senator Bayh. One last question. Is the kind of drug which relieves pain free from affects that might increase competitiveness?

Dr. Cooper. Of course aspirin will relieve pain. It is probably the most commonly used pain reliever most of us use and I am not just exactly sure what your question is getting at. I don't understand completely——

Senator Bayh. Is it possible to inject a drug for the relief of pain and be certain that in relieving pain, which is the primary use of the drug, that you are not giving that athlete a shot of something that might change the rate of metabolism, or whatever effect it might have on the athlete to increase his performance beyond just relieving the pain?

Dr. Cooper. To my knowledge there is no evidence that any of this has ever happened to increase anybody's ability to perform. I think conversely, in certain susceptible individuals, you might find certain drugs used to relieve pain which might indeed slow them down.

When they talk about horseracing, I am sure you are aware of the fact when they talk about a fixed horse race, to my knowledge there is no way they can fix it to make any horse run faster. What they will do is set it up so they will sedate maybe six out of eight horses and then bet all of their money on the two horses that are unsedated. It is kind of a reverse doping situation. This is the reason for the justification of the testing in the horse or in the animal.

Senator Bayh. Well, then, what is the purpose of testing for drugged horses, because, you know, if what you say is true, why should you deny the horse a chance to run in the Preakness or the Kentucky Derby as the case may be, just because that horse had been given drugs? You say it doesn't make him run any faster but actually slows him down.

Dr. Cooper. Well, this is one of the things that is a good question to ask.

Senator Bayh. That is why I ask it.

Dr. Cooper. Well, I wondered the same thing. As I say, there is no evidence, although, you know, people might think that it w make them run faster.

Senator Allen. But it does not stimulate them?

Dr. Cooper. Not to my knowledge.

In France for the last 6 years they have been conducting experiments with the racing horse people where they have been on every Wednesday injecting every known medicine that has ever been accused of being a stimulant into the horses—or for that matter to the humans—and over these last 6 years they have never ever, measuring every perameter, that is, running the horse warmed up, running the horse fatigued, under every type of situation and condition, there has never yet been shown a horse that could run any faster than he could when he was drug free.

As I said, this is one of the things that is a paradoxical situation. I am sure it is up for debate, just like many things are debatable, but it is my opinion the French studies are relatively significant.

Senator Bayh. Well, I certainly know nothing about the ins and outs of horse racing with or without drugs, but it is rather interesting to note that there is this prohibition in the horse racing field against any kind of drug.

Dr. Cooper. Yes, they have a very strong feeling, and even Butazolidin caused them a lot of problems. I don't think anybody ever said Butazolidin allowed a horse to run faster.

Senator Bayh. Maybe it is rather difficult for a horse to tell you where that pain threshold is.

Thank you very much, gentlemen.

We appreciate your giving us your thoughts on this problem.

[Dr. Cooper's prepared statement is as follows:]

PREPARED STATEMENT OF DONALD L. COOPER, M.D., ON BEHALF OF THE AMERICAN MEDICAL ASSOCIATION

Mr. Chairman and members of the subcommittee, I am Donald L. Cooper, M.D., a general practitioner, presently serving as team physician at Oklahoma State University, Stillwater, Oklahoma. I also serve as a member of the Committee on Medical Aspects of Sports of the American Medical Association. With me is Mr. Roy S. Bredder, a member of the AMA Legislative Department.

The American Medical Association welcomes this opportunity, in response to your invitation, to present its views on the use of drugs in athletics. Our Association shares the strong concern of the Committee, evidenced by its extensive hearings held to date, regarding the widespread abuse of drugs by youth in general. We have for some time been concerned, not only with the general widspread usage of drugs by our youth, but also with the special use of drugs by our young athletes. We believe that your current hearings on the proper and improper use of drugs by athletes, focusing on high school and college age athletics, provide a timely exploration of this subject. We shall attempt to respond to the Committee's stated interest in the use of drugs such as amphetamines and anabolic steroids, the extent of use of additive and restorative drugs, as well as in guidelines relative to the improper and proper use of drugs by athletes in athletic competition.

For the purposes of this discussion it should be kept in mind that drugs which may be the subject of abuse may also have proper therapeutic usage. Drug abuse in this context, then, refers to the self-administration of drugs, without medical supervision and particularly in large doses. By contrast, therapeutic use refers to a drug with medicinal value administered by a physician to treat illness, injury, or deficiency. Drugs abused in athletics also have therapeutic value when used properly. They are abused when they are taken without a physician's advice and without informed medical judgment.

I want to make it clear from the outset that drug abuse in athletics is not an isolated event but mirrors a widespread problem particularly among the youth of our communities.

A listing of drugs that athletes experiment with would be lengthy. The amphetamines and the steroids, however, are the ones causing most concern. A synopsis of these two classes of abused drugs will illustrate the general nature of drug abuse among athletes.

AMPHETAMINES

Our first concern will be amphetamines, the so-called pep pills.

This Committee is well aware of recent actions taken to reduce the availability and use of amphetamines. The medical profession has strongly supported these restrictions, particularly in view of the limited therapeutic indications for such drugs. Amphetamines may be indicated medically, however, in selected instances such as the control of hyperkinetic behavioral disorders in children; and in the treatment of patients with narcolepsy—an uncommon disorder characterized by an uncontrollable desire to sleep.

There is, however, no valid reason for their use by athletes in athletic contests. Moreover, the National Association of Intercollegiate Athletics, the Amateur Athletic Union, the National Collegiate Athletic Association, the International Amateur Athletic Federation, and the International Olympic Committee have all banned the use of these drugs in athletics.

The position of the American Medical Association is also very clear on this matter—amphetamines have no place in athletics.

AMA concern with drugs in athletics dates at least to 1957. A resolution was introduced that year into the House of Delegates of the AMA alleging widespread abuse of amphetamines. An Ad Hoc Committee on Amphetamines and Athletics was appointed by the AMA to undertake a survey. A sample of 800 high schools and colleges revealed that less than one percent of the athletes had abused drugs. The low drug abuse reported in this survey among athletes corresponded generally with the relatively dow incidence of abuse in the youthful population at that time. No recent national surveys have been conducted on the extent of amphetamine abuse in athletics, but there is reason to believe that the incidence is higher, again corresponding with the higher use among students generally. As members of the youth subculture, athletes are encouraged through sometimes subtle social persuasion from their peers to consume drugs, quite distinct from reasons of taking them for a *supposed* advantage in sports. The athlete could conceivably start abusing amphetamines in high school and continue in college. His frequency and duration of drug abuse over that period would be substantial. His habits of abuse coupled with apparent easier accessibility of the drug and peer acceptance of drug abuse could develop into a behavior pattern difficult to eliminate even after his formal athletic career. The "National Survey of Student Data," conducted by the National Commission on Marihuana and Drug Abuse, indicates that drug abuse among the general student population has increased, and it is logical to expect that athletes as members of that subculture have also been influenced to abuse drugs more in recent years. Therefore, our impression is that athletic drug abuse has increased.

Because drugs such as amphetamines are not permitted in athletic events, concerted efforts have been made in recent years by the athltic community to control abuse. The prestige associated with winning at an international competition raises the incentive, even more than most athletic contests, to use any method to try to improve performance. As a result several procedures for control have been developed and used in international competitions.

A reliable scientific drug detection and monitoring program instituted in all athletic events would be expensive and time consuming. For instance, where urine is monitored, facilities and staff must be available to collect samples and to label, seal, and code them properly. Most laboratories are geared only for determination of fairly large amounts of drugs, as in poisonings or suicides. Gas chromatography. electrophoresis, and crystallography can be used for analysis, but these must be well controlled.

When testing is to be done, it should be carried out on all participants. When only winners are tested, the implication arises that there is some relationship between winning and drug taking. In reality the opposite has been found to be true. Where a drug detection system has been used it has generally been welcomed by the athletes because it assists them in resisting social pressure to use drugs. This should be a primary consideration in the implementation of drug detection systems.

There are conflicting reports in the literature as to the possible minimal benefits of amphetamines in enhancing performance. But it is our opinion at this time that valid scientific evidence does not show improvement in athletics. Some studies actually show impairment of certain skills. Even if it were found that such drugs enhanced performance, there would remain, among others, the question concerning the propriety of such use within the spirit of amateur athletics.

Moreover, the detrimental effects of continued amphetamine abuse are substantial. It is stated in *AMA Drug Evaluations* that overdosage may cause nausea, vomiting, retching, cardiac irregularities or convulsions, and that delayed psychotic reactions characterized by euphoria, agitation, confusion, and visual hallucinations have occurred. The Council on Mental Health of the AMA has said: "Abuse of these substances arises from and is perpetuated solely by psychic needs to overcome depression or fatigue or to attain the euphoric and excitatory effects associated with the drugs." Clearly there is a substantial health risk involved in amphetamine abuse.

ANDROGENIC-ANABOLIC STEROIDS

Synthetic anabolic steroids were originally developed to simulate the body-building action of natural androgens. Androgen is any substance that possesses masculinizing actions. Testosterone, the male sex hormone, is the most potent androgen. It is a primary factor in growth and development of male secondary sexual characteristics. The development of a synthetic steroid that could retain the anabolic growth effects of testosterone without the associated sexual changes would be an important medical advancement. There is no pure anabolic agent without the androgenic effects. In proper dosage, these drugs can benefit some carefully selected children, boys and girls, with growth disorders, and they are used in debilitative diseases of both men and women. Thus they have a valid medicinal value when treating certain deficiency disorders. They have no role where normal metabolism exists.

The extent of abuse of anabolic steroids in sports is unknown. While no national surveys have been conducted to assess it, it is believed by many team physicians that their abuse has increased in recent years. Unlike amphetamines, there are no analogous data available from a survey of the general student population. Anabolic steroids have such a specific purpose that their abuse is confined much more to the athletic community. In athletics, anabolic steroids are used largely by weight lifters, shot putters, discus throwers, javelin throwers, wrestlers and football players in an attempt to increase body size or strength. The suspected increase in abuse may again reflect the current liberal position of the youthful community to drug abuse practices.

The issue of whether these drugs enhance strength or athletic performance in athletic competition is purely academic. Their use by athletes is banned by all amateur athletic codes and there is no therapeutic reason to justify their use by a healthy athlete. Nevertheless, the use of anabolic steroids presents a complicated problem. The human body has many known steroids, and the total interrelated action of all these and other hormones is not fully understood. When a steroid drug is introduced or given to a normal individual, it can cause profound metabolic imbalances. The problem is further compounded by the fact that many athletes in their zeal will take five, ten, or fifteen times the normal dose recommended by the manufacturers or the pharmacologists. No one to my knowledge has done research with these massive doses, and the human damage that could result is unknown. One study was unable to demonstrate any increased strength, motor performance, vital capacity, and physical work capacity. This was a good, scientific investigation that used normal dosages of androgenic-anabolic steroids. There was some weight gain, but most of this was believed to be due to fluid retention, which is a common finding with the use of steroids in humans, and caused by sodium retention from altered electrolyte balance. Another study also documented the inability of anabolic steroids to increase effective weight or strength among normal persons. Where other studies seemed to show a gain in strength and size, they were in general not of the double blind type and this fact made it difficult to evaluate the "psychological input." The placebo effect must be controlled as it has recently been shown that dramatic improvements in strength were recorded when subjects were told they would be given anabolic steroids even though they were not.

There are real dangers to youths using anabolic steroids. The possibilities of the premature development of male secondary sexual characteristics in young boys, virilization in females, and accelerated bone maturation of both sexes are definite risks. The accelerated bone maturation means premature closure of the epiphyses in long bones. In other words, a youth may close his epiphyses prematurely and never become the height and size of which he is capable.

Besides these effects, anabolic steroid use by normal men has been associated with testicular atrophy, loss of libido, and on rare occasions, increase in size of the prostate gland. If a young person has a hormone sensitive tumor, the increased amount of steroid may spur it on to more rapid and dangerous growth. Inflammation of the liver has been reported as it apparently cannot metabolize all of the extra steroid hormone.

PREVENTION AND CONTROL

There has been a concerted effort by the sports medicine community to restore a meaningful perspective to the medical uses of drugs in athletics. When the AMA Committee on the Medical Aspects of Sports first alerted the athletic community to amphetamine abuse in 1959, it also voiced active opposition to any use of drugs by athletes for the purpose of supposedly enhancing athletic performance. In 1965 the Committee again strongly advised that the giving of anabolic steroids to healthy athletes had no medical justification.

As recently as June 1972, the House of Delegates of the AMA reiterated an unequivocal statement by the Association that amphetamine and anabolic steroid drugs have no medical purpose in athletics. Throughout this whole period, the Committee has utilized various communication media in a continuing effort to educate athletes, coaches, athletic trainers, and team physicians concerning the health hazards involved in the abuse of these drugs. But the multiplicity of drug abuse patterns among youth demand diverse educational strategies. Drug abuse prevention among athletes requires approaches similar to those for any group. Even though drug detection procedures are necessary, drug education related to prevention is more important.

Success in ameliorating the total drug problem requires the concerted efforts of agencies representing all segments of the community—law enforcement, education, religion, industry, business, medicine, along with parents and most important, the youths themselves. Many communities have been able to provide prevention, rehabilitation, and understanding through the synergistic action of everyone in the community. They have found that a shotgun approach to drug abuse prevention with facts alone about drugs does little to discourage abuse.

The most promising trends in mounting successful programs have included a reexamination of relationships between people as well as assistance to help them learn and use accurate information to humanize education. This course is superior to placing the emphasis on the acquisition of knowledge. Whereas many of the original programs were oriented towards the drugs, more promising programs focus on the individual. The abuse of a drug is usually only an external manifestation of a problem, and is an indication of the individual's value system.

In athletics, a discussion of values must include a reconsideration of the purpose of sports programs. These considerations may lead to modifications of a system that frequently only reward the winner, and with little regard for individual athletes. Such limited programs restrict the health, education and recreational benefits of athletics. The lack of regard for the individual, in addition to game pressure, may well be factors in encouraging drug abuse among athletes.

Since the athlete is like any other youth, as pointed out, general prevention is necessary. New ways are needed for health educators to deal with the total family unit. Parents exert substantial influence on their children through their own unconscious behaviors. Providing an orderly growth and development for young children through aiding families and improving environmental influences holds the greatest promise of success in combating drug abuse among youths, including athletes.

THERAPEUTIC USE OF DRUGS

Therapeutic use of drugs to relieve pain is a second broad category of drug use of interest to this Subcommittee. Perhaps a reminder is in order that the therapeutic use of drugs to treat disease or injury and relieve symptoms should not be confused with use of drugs taken solely for a supposed advantage in sports.

The class of drugs referred to here represents local anesthetics (e.g. novocaine), analgesics (e.g. aspirin and narcotics), and anti-inflammatory agents (e.g. cortisone). The first two groups are often referred to in lay terms as "pain killers."

The local anesthetics can be injected directly into a damaged tissue to produce almost instant pain relief. The analgesic drugs can be taken orally or by injection, to produce a reduced consciousness of pain. An enumeration of all these agents would be extremely lengthy and serve no useful purpose. Such a list would contain all the medications in these classes which are prescribed for the general population.

We should remember that in the medical care of athletes, as with other patients, consideration must be given to the whole individual. Medical judgments often include psychological or social considerations relating to the total well-being of the individual.

Of course the pimary consideration entering into a physician's decision concerning whether an athlete should play again immediately following medication to reduce pain is the location and severity of the injury and the extent of risk of further damage. Of foremost concern is the general health and well-being of the athlete, and nowhere do we imply that there is an attempt to gain an athletic advantage through such required medical treatment.

This raises the issue of participation by athletes handicapped by an illness, such as asthma, and who can only compete with the aid of medication. These athletes are to be commended for overcoming tremendous physical handicaps in achieving the athletic success they do. Many amateur athletic associations may have to re-evaluate their stringent rulings in this regard to encourage such individuals to participate.

From this discussion, I am sure it is apparent that reaching a judgment in sports medicine is perhaps more complex in some ways than it is in the ordinary practice of medicine. Mr. Chairman, I will conclude here, and will attempt to answer any questions you might have.

Senator BAYH. Our next witness is led by Walter Byers, executive director of the National Collegiate Athletic Association.

I understand Mr. Byers is going to lead a panel of witnesses?

STATEMENT OF ROBERT PRITCHARD, CHAIRMAN, NATIONAL COLLEGIATE ATHLETIC ASSOCIATION'S DRUG EDUCATION COMMITTEE, ACCOMPANIED BY PHILIP B. BROWN, LEGAL COUNSEL OF NCAA; DR. CARL S. BLYTH, CHAIRMAN OF THE PHYSICAL EDUCATION DEPARTMENT AT THE UNIVERSITY OF NORTH CAROLINA AND ADMINISTRATOR OF THE NCAA COMMITTEE ON COMPETITIVE SAFEGUARDS AND MEDICAL ASPECTS OF SPORTS; ALLEN HART, HEAD TRAINER AT OHIO STATE UNIVERSITY; JAMES WILKINSON OF THE NCAA ADMINISTRATIVE STAFF AND DIRECTOR OF THE NATIONAL SUMMER YOUTHS SPORTS PROGRAM; AND DR. DONALD L. COOPER, TEAM PHYSICIAN AT OKLAHOMA STATE UNIVERSITY

Mr. BROWN. Mr. Chairman, Mr. Byers is not here. The NCAA's statement will be presented by Robert W. Pritchard, chairman of the NCAA Drug Education Committee and we will introduce the other participants.

Senator BAYH. Fine.

Before you get started, for the education of the chairman as well as the reporter, could you identify those with you?

Mr. PRITCHARD. Yes, sir, I will. To my extreme left is James Wilkinson, who is our liaison man between our committee and the NCAA Executive Offices in Shawnee Mission, Kans.

To my left is our legal counsel, Philip B. Brown.

To my right is Carl Blyth, head of the Physical Education Department at the University of North Carolina and also chairman of the Competitive Safeguards and Medical Aspects of Sports Committee.

To my right is also Allen Hart, trainer at Ohio State. Dr. Cooper, whom you just heard, will be with us also as part of our program.

The five points you, Senator, asked us to respond to, will be covered by separate individuals here. I want to state first of all the policy of the NCAA on nontherapeutic drugs as set out in the following resolution adopted by the 1971 NCAA convention:

> SECTION 1. The NCAA condemns the employment of nontherapeutic drugs in any of its member institutions or affiliated organizations by staff members who authorize or allow their student-athletes to use such drugs, and by student-athletes who do use such drugs.
>
> SEC. 2. Staff members or student-athletes at member institutions who use drugs in a nontherapeutic manner in any athletic program are in violation of the principles of ethical conduct of the NCAA.
>
> SEC. 3. All member institutions, their athletic staffs and their student-athletes should assert aggressively their wholesome influences in combating usages of nontherapeutic drugs among the Nation's youth.

As I said, this was adopted by the NCAA in 1971 at the NCAA Annual Convention.

The NCAA's efforts against drug abuse are proceeding on these fronts: (1) Education; (2) assessment of the nature and extent of drug abuse by athletes; and (3) development of an enforcement program.

I. EDUCATION

The NCAA Drug Education Committee was formed by the NCAA Council in August 1970, because of concern over apparently increasing drug abuse by young people, and it has taken an active role in the athletic antidrug program.

We are proud of the program we have developed, but we realize a great amount of work is ahead if we are to control drug abuse.

The problem of drug abuse is one of the biggest challenges this Nation is facing. The lives of many young people depend on the solution. The situation is critical.

Abuse of drugs, always widespread but covert, has become a matter of public fact in the 1970's. It is impossible to foresee a time when it will be eliminated, but we believe that control of drug abuse can be achieved. In order to accomplish this, however, the institutions of society being affected by the problem must accept a responsibility for its solution.

For this reason, we believe the NCAA Drug Education program is of critical importance as a practical approach and, furthermore, as an example for other institutions to follow.

The initial approach taken by the NCAA Drug Education Committee was an educational poster and media campaign. Since 1970 more than 350,000 posters and many news articles have been printed and distributed to the following organizations:

The Members of the United States Congress.
The more than 700 members of the NCAA.
The entire membership (approximately 500 institutions) of the National Junior College Athletic Association.
The National Federation of State High School Associations, which is composed of about 24 or 25,000 high schools in the United States.
The National Association of Basketball Coaches.
The Boys Clubs of America.
The California Junior College Athletic Association.
The Fiesta Bowl.
The Bureau of Narcotics and Dangerous Drugs.
The Pop Warner Football League.
The Girl Scouts, Boy Scouts, State and Local Governments.
Health agencies.

I would like to submit for the record and for the subcommittee's information copies of the various posters and samples of news articles we have published in game programs and newspapers throughout the United States. These are our exhibits A and B.

The posters are produced thre times yearly. Each issue of 30–40,000 posters projects the sports activities for one of the three sports seasons during the school year, one for fall, one for winter and one for spring. These posters have become a familiar sight in high schools and on college campuses throughout the country.

We have written and published a pamphlet entitled "The Coach: Drugs, Ergogenic Aids and the Athlete". This is our exhibit C.

Through the cooperation of the Bureau of Narcotics and Dangerous Drugs, we printed 250,000 copies of the pamphlet with a goal of trying to get them into the hands of every coach of amateur teams in this country. The distribution was as follows:

Distribution: We sent 165,000 to High Schools, 10,000 to National Junior College Athletic Associations, 15,000 to 4-Year Colleges, 5,000 to Fiesta Bowl, 3,000 were sold, and 25,000 distributed to superintendents of schools in 75 school districts in the United States where drugs seemed to be a problem.

Senator BAYH. What information is included in this distribution? You talk about posters. I have here a copy of a pamphlet. You send out packets of all of this information? And when you mentioned the numbers, what were you referring to?

Mr. PRITCHARD. For example, we sent those to high schools in the State of Pennsylvania, and we send them to the educational department. There are enough copies that they could distribute them to the various schools in the State of Pennsylvania. This was repeated in all States.

Senator BAYH. That is what I wanted to get to though. When you say copies, copies of what?

Mr. PRITCHARD. All right, the copies of the posters you see here on my left are posted in hallways, lockers and in guidance and counseling rooms and so on.

The pamphlets that I am referring to were sent to the coaches primarily.

In the pamphlet is information for a coach on how to recognize someone who had a drug problem. Perhaps they can find the problem out and we offer them some solutions as to how to handle it. These were sent to many coaches and to many individuals.

We were quite limited in our 250,000 copies though——

Senator BAYH. That is' what I am saying. When you talk about 250,000 copies, are you talking about 250,000 copies of that pamphlet there or 250,000 copies of those posters there? [indicating]?

Mr. PRITCHARD. There are 250,000 copies of that particular pamphlet and 350,000 copies of the various posters.

Senator BAYH. Thank you.

Now while I am on this, has the NCAA talked with or worked with or established any kind of working relationships with the various State athletic associations, the boards of education and similar organizations to make education in the area of drug abuse and misuse more meaningful than a poster on a wall or a pamphlet on the desk of a coach? In other words, both of those are salutory efforts but it does seem to me actually making the athletes themselves aware of some of nuances contained in this pamphlet is what we are after first. This pamphlet helps the coach observe and perhaps be able to discover some of his charges who may have fallen prey to drugs, but what have you done for the actual athletes?

Mr. PRITCHARD. We worked primarily with Mr. Cliff Fagan, who is head of the National Federation of State High School Associations and he took care of the distribution.

We felt we had to start first with our membership. You will find as you go through this material that many members of our committee and others have spoken at large congregations of students and coaches, clinics and so forth, which we hope will make coaches more aware of the problem, so they will read up on it and study it and be more helpful in solving this problem.

We are quite limited though, sir. We have a committee of people who donate their time. We do not have a full time man anywhere in our organization. With more assistance, with more finances, with some full time people we probably could move more in the direction of what you ask.

Senator BAYH. Thank you. I appreciate that.

Mr. PRITCHARD. Furthermore, 2,000 copies of this were sent to the Bureau of Narcotics and Dangerous Drugs and 1,000 to Members of Congress, 2,000 to California junior colleges, 3,000 to football coaches, 3,000 to basketball coaches, 1,000 to college commissioners, 10,000 were donated to organizations—such as: YMCA's, PTA's, NSYSP, State and local governments, Boy Scouts, Girl Scouts, U.S. military and many others and 4,000 to Volunteer Service Bureau, Kiwanis, Human Resources Organization, boys clubs, American Medical Association and other other groups. Also, 1,000 miscellaneous. So that totaled 250,000.

The demand for this was so great that we then had printed a second printing of 50,000 copies sent out. This is our exhibit D.

As an example of the reaction generated by the pamphlets, I would like to present a column by the National Interscholastic Swimming Coaches Association of America. This is our exhibit E.

Once again, through the cooperation of the Bureau of Narcotics and Dangerous Drugs, we printed and distributed more than 40,000 copies of a drugs identification chart for display in locker rooms and training rooms. The chart was widely distributed among 4- and 2-year colleges and high schools. This is our exhibit F.

In 1972 we expanded our posters, news article, and pamphlet campaign by publishing and distributing more than 1 million copies of a drug flyer entitled "Get High on Sports, Not Drugs." This is exhibit G.

This publication, containing a feature article prepared by Dr. Hardin Jones of the University of California, Berkeley, and a member of our committee, who was unable to be here today because he is in Alaska on similar business, was designed to provide information on the problems of drug abuse for the parents of young athletes.

I will not go through the details of the distribution. It is contained in this statement. There was a total distribution of 1,080,000 copies.

Financial support for this pamphlet was provided from the Fiesta Football Bowl at Phoenix, Ariz.; National Federation of State High School Associations; and the Bureau of Narcotics and Dangerous Drugs. Incidentally, I want to compliment the Fiesta Football Bowl Committee of Phoenix, Ariz., which this year completed a pledge of $30,000 to the NCAA Drug Education Committee. This is our exhibit H.

In addition to the printed materials we provide, we have produced spot television promotions which have appeared regularly during the NCAA college football telecasts. These spots have featured outstanding college athletes such as Arizona State's quarterback, Danny White and Florida State's quarterback, Gary Huff as well as outstanding collegiate coaches such as Penn State's Joe Paterno.

A "rap session" among a group of young people at St. John's University in New York was also a part of the series. It was held during the youth summer program, which the NCAA supports. We have photographs of this taken from the film clips and I think Mr. Wilkinson has them here.

Jim, would you like to hold them up briefly please?

This is a rap session done on drugs two summers ago.

Our committee members have also spoken to groups of coaches and trainers about drug education as well as to medical symposiums, civic groups, and convocations on college campuses. Dr. Cooper has been especially active in this program.

I would be remiss not to point out the NCAA's participation in conducting tours to the Far East and Europe where many outstanding college athletes and coaches used their summer and Christmas vacations to talk with our servicemen. One of the most discussed topics was drug education. The NCAA currently is conducting tours number 8 and 9 with the Department of Defense and two tours are bein gcosponsored with the U.S. Pacific Air Force this summer.

I have spoken first about the educational part of our program; the second phase of the program has been the assessment of the problem.

The NCAA is presently in the midst of a project designed to develop hard information on the questions whether there is a drug problem among college athletes and what the nature and extent of the problem are if, in fact, one exists. From among member institutions which volunteered to cooperate, the NCAA selected 143 representative colleges to which "blind" questionnaires entitled "NCAA Drug Use Questionnaire" have been sent. This questionnaire, copies of which we are submitting to this subcommittee—exhibit I—is to be filled out anonymously by student-athletes at the selected institutions.

In all, 22,600 individual questionnaires have been sent, to institutions which include both large and small colleges, both public and private institutions and colleges located in each of the States. The completed replies are being sent to a computer service center in Memphis, Tenn., for compilation of the data.

This survey is designed to obtain information indicating the types of drugs used by college athletes, and the extent and degree of usage in college athletics. We feel that we are developing the most meaningful information ever obtained in this area, and that it should be invaluable in assessing the need for and design of future NCAA programs. We will provide this subcommittee copies of the results of the survey once they have been compiled.

The third phase of our program has been the development of testing and enforcement programs.

At the 1973 NCAA Convention, the member institutions amended the association's bylaws to establish legislation in addition to their previously adopted policy declaration. It is our exhibit J. Bylaw 4, section 2, reads as follows:

Student-athletes competing in NCAA championships shall not use any unauthorized drugs which may endanger their health or safety or which may seemingly give an unfair competitive advantage to an individual competitor. This does not preclude the use of drugs prescribed by a physician in the course of medical treatment. (Adopted: 1/13/73)

(*a*) The Council shall, from time to time after enlisting expert advice and study, enumerate the drugs which may not be used. (Adopted: 1/13/73)

(*b*) The Executive Committee may authorize urinalysis or other methods for testing student-athletes who compete in NCAA championships to determine the extent of drug usage therein. (Adopted: 1/13/73)

We are presently in the process of determining which substances the NCAA council wil lofficially designate as drugs which "may not be used". We also intend to institute a program of urinalysis of athletes competing in NCAA championships. Testing will start in the fall of this year. In this first effort, we do not intend any punitive measures for any individual or college. We plan only to gather facts which we hope will provide us with future direction.

In conclusion, the NCAA, in general, and the NCAA Drug Education Committee, in particular, stand ready to cooperate with any valid and responsible effort to deal with this issue.

With your permission, I would like to ask the members of this panel to speak directly to the other specific areas outlined by Chairman Bayh in his invitation to testify.

I have attempted to cover the other points, Mr. Chairman, that you requested be reviewed. If the other members of our panel would like to offer additional comments, I invite them to do so.

Mr. Chairman, I would like to submit this statement for the record.

Senator Bayh. Fine. It will be inserted at the conclusion of your testimony.

Mr. Pritchard. Mr. Chairman, in response to your first question of your original letter to us, I would like to ask Dr. Cooper after he returns if he will focus on the ethical considerations involved in the use of nonrestorative drugs including stimulants, such as amphetamines, and anabolic steroids, and I think 3 to 5 minutes would probably cover a subject of this type.

Senator Bayh. Let me first say, Mr. Pritchard, I appreciate your statement representing the NCAA and the overall policy. I appreciate the contribution the other gentlemen can and will make.

We have a problem of time here, though. If you could hit the highlights, we will put the whole statement in the record. So if you could confine your remarks to specific questions and concerns, I would appreciate it very much.

Dr. Cooper. I want to mention in terms of the ethical situation, again, it is one where the physicians, I think as a group, the team physicians, and the trainers as the group of certified trainers, the National Athletic Trainers Association, have all become much more aware of the encroachment of this problem in our areas of endeavor and have all become much more concerned with the fact that there be no question of our position on these situations.

And the basic position of the team physicians, as far as the organized groups, whether it is through the American College Health Association, the Athletic Medicine Section or the group that is associated with the NCAA in their winter meeting, they have all taken the position that there is no legitimate indications for any of these substances at any time in an athletic contest, except for possibly the exceptional individual who has a medical condition and is taking a medication for treatment for the medical condition.

The problem in terms of testing for the amphetamines, is one that can be resolved. The problem for testing for anabolic steroids is one that has not been resolved. The individual could conceivably take these things not under the prescription or prescribed use, to my knowledge, of any ethical physician or ethical trainer at this time.

I think there are many uninformed physicians and I think we have a tremendous task in terms of educating our own people to the potential dangers involved. I think this is one of the things that makes it extremely difficult to reach the people that are in a position that would be prescribing the substances relatively unknowingly and unaware of the possible complications associated with them. I think many times family physicians are busy, overworked, and put into a situation where the boy concerned makes an appealing story or brings some magazine or some article from someplace in and says this was used and so the doctor says, all right, let's try it without really exploring the ramifications of it.

I think we have a very important job to do in terms of educating our own people.

Senator BAYH. I think you are in a particularly important and responsible position; wearing two hats as a member of a profession which is charged with the health and welfare of our people on the one hand, and on the other hand, having your specific relationship with one of our outstanding universities and their athletic accomplishments.

Let me just ask one question in this regard. In referring as you did, Mr. Pritchard—and I don't know whether to direct this to you or Dr. Cooper or any other member of the panel—to urine testing of amateur athletes or at least of students who compete in NCAA championships, whatever method you devise or pursue, are they going to be applied across the board to all of those who compete or just to the winners as Dr. Cooper pointed out in the world weight lifting championship?

Mr. PRITCHARD. It would be out intention to test everyone in a uniform manner.

Dr. COOPER. All of the participants, yes.

Mr. PRITCHARD. And not just the winners.

Senator BAYH. How are you going to determine where you test and where you don't test?

Mr. PRITCHARD. It is a matter of logistics and whether we have the money and have the people available. For instance, it would be almost impossible to test at a cross-country championship where there were 600 or 700 people running.

We hope that they will do it in such sports as soccer, with a limited number of participants, limited by rule; in football where there are also limits; basketball where there are traveling limits; swimming where by nature there are not too many athletes involved. Our intention will be, if we can handle the logistics, to test all participants; both winners and losers.

Our intention is to test originally without any punitive measures in mind whatsoever, because we are looking for facts; we are looking for research; and we want to know what the situation is. Nobody knows right now.

Senator BAYH. Yes; well I certainly will be very anxious to have the results of the studies that you are undertaking. It is sort of a sad comment, isn't it, that organizations such as yours, representing the finest in American amateur athletics, are contemplating or forced to contemplate lining up the participants before or after an event. Perhaps the results of this other positive effort to educate will make the need for this testing after the fact less necessary.

If there was just some way we could find the few unscrupulous individuals and thus avoid treating everybody in this manner. But I don't suppose there is any magic way to do that?

Mr. PRITCHARD. I assume if an athlete knew he would be tested, it would be a deterrent to use of drugs to begin with.

Secondly, we are convinced the youth of America today looks up to athletes more than any other people. We all know that athletes are on television selling underwear, cigarettes, cokes, everything else. All they have to do is have an athlete step out with something and all of the kids run down to the corner and buy it. If we can get our athletes, who are highly revered by young people, to give a hard sell on the dangers of drugs, we think we can be most effective and maybe beat this problem which is the worst social problem facing us today.

Senator BAYH. Well, I have noticed and am sure you have, the number of professional athletes who have lent their names and persons, as well as amateur athletes, to what I feel are very effective short spots on television dealing with this very thing. In fact, there is a problem here. I can't help but feel those who have lent their good names to this kind of thing are probably making a greater service to the future athletes in our country than those who want to sell underwear; not that there would be anything wrong with selling underwear too, you understand.

Mr. PRITCHARD. I wouldn't disagree with you, sir, but I think any boy on the street can visualize himself as becoming a collegiate athlete because his brother may be one or his neighbor may be one or the boy across the street may be one, but he may find it difficult to associate himself with a professional athlete.

I think using a college athlete may have a better effect than a pro. I don't want to get into an area like this because that is an area remote from us.

There are problems involved and I would rather not speak too much about the professional athlete in this.

Senator BAYH. Well, I don't want to participate in any balancing of the merits of who can do more, because I think there is room for both. I must say, if you see the best athlete, a person recognized as the best pro in the country, telling future star amateurs that he is getting a worse knock by using drugs than he gets on the field, that that has an impact on amateur athletes, who watch.

Mr. PRITCHARD. I agree with you.

The second member—if you want us to continue on our five points?

Senator BAYH. Yes, please.

Mr. PRITCHARD. Is Mr. Hart, athletic trainer at Ohio State, who will discuss the assessment of the extent of the use of additive and nonrestorative drugs by athletes.

Mr. HART. Thank you, Mr. Chairman. My statement actually is very brief. You changed the question on me, frankly, from the first letter that I got, which said "an assessment of the extent of use of additives and resorative drugs by athletes" from the one we have today of "the extent of use of additive drugs by athletes."

I really only have one brief statement to make. I, like Dr. Cooper here, know of no trainer, and of no team physician, who is prescribing what we must consider illegal medications in athletics. I would just as soon submit this as a general statement.

We certainly do not at my institution do that and really I do not know of any physicians or trainers who are dispensing any medication that they shouldn't so to speak.

Senator BAYH. Let me ask you as a trainer who must implement the NCAA rules and regulations as well as the regulations of your institution at Ohio State—and I might as a Purdue alumni, add I have heard of it.

Mr. HART. Thank you, sir.

Senator BAYH. How does a trainer assess where you draw the line?

I heard Mr. Pritchard saying they are now undertaking a study to determine what drugs will officially be designated as drugs which may not be used. But how do you interpret the regulations—and I think to prove I have the NCAA position I will quote:

> Student athletes competing in NCAA championships shall not use any unauthorized drugs which may endanger their health or safety or which may seemingly give an unfair competitive advantage to an individual competitor.

How do you as a trainer, define what are nontherapeutic drugs and under what circumstances?

Mr. HART. Well, as a trainer, I really do not get involved in drugs. This is up to the team physician to determine what he will prescribe and not prescribe, and I as a trainer, do not dispense any medication.

I should qualify that by saying if my team physician asks me to give at least 10 aspirin tablets to player number X, I will do that acting simply as a pharmacist in this event, but I can, as a trainer, and do not dispense medication.

Senator BAYH. You don't dispense medication at all?

Mr. HART. Only that authorized by the team physician, which is very very little.

Senator BAYH. No other trainers do to your knowledge?

Mr. HART. To my knowledge, they do so only in the same situation; where the team physician asks us to give someone a particular medication, we would do this and this is recorded duly on the athlete's chart.

Senator BAYH. Just for my own information, when you mentioned a moment ago you were not aware of any other trainers or any other physicians who were utilizing or dispensing these drugs, did you also say physician or did you just say trainers?

Mr. HART. I said trainers and physicians. I am talking about a number of physicians and trainers. I feel very strongly in this regard.

Senator BAYH. Since you yourself by definition are not charged with dispensing this kind of medication, how can you be so certain that it is not being dispensed by physicians who do have that responsibility?

Mr. HART. Well, I am sure—well, let's define the medications we are talking about?

Senator BAYH. Somebody has to make this decision?

Mr. HART. Right. Are we talking about amphetamines or anabolic steroids, or are we talking about cold preparations and this type of thing?

Senator BAYH. We are talking about the use of any substance, any drug, that may be unauthorized and that may have a seemingly salutory effect on competition. We are talking about where you draw the line between making it possible for an athlete to play because of a relatively minor injury that causes significant pain and where you get across the threshold where competing under those circumstances may have long-term disadvantageous effects on the individual.

I can't make that assessment sitting back here.

Mr. HART. Right. Certainly I cannot speak for other institutions other than what I have observed at various competitions and from what I have heard in talking with trainers and talking with physicians. And I think we all feel pretty much the same way on this. Let me give you an example of my own institution and how we handle medications.

We have medications locked in a cabinet and when the doctor wants to prescribe any medication, he will ask me to dispense the medication. The unit is recorded on a chart. I keep track or keep a log of what medications are dispensed and am responsible for the purchasing or the requisition, I should say, from a pharmacist of the medications to restore the stock.

So I know exactly what our physician is doing with this stock. Also if he happens to write a prescription, we have a copy of that on the chart.

I think this is done very similarly in other institutions. We do not stock in Ohio State any narcotic stimulative type medications. If, for instance, the doctor wants something for pain, if he wants a little codeine to use for pain, he will write a prescription and that will be filled at the health service pharmacy. We don't stock anything of a narcotic nature in our particular situation.

Senator BAYH. Well, will that doctor have that pain killer in his bag in the event he needs it at halftime or does he have to run to the pharmacy to get it?

Mr. HART. No; he will have in his own personal medical bag that.

Senator BAYH. Mr. Hart, this is significant. What impact does the coach have on this decision which according to you is a decision made by the physician?

Mr. HART. I think that has to be handled individually. Again, at our institution the coach really has no influence on the physician.

Senator BAYH. You mean he never stresses the importance of a given athlete and a given game in trying to find out just what is necessary to make it possible for that athlete to compete safely?

Mr. HART. Absolutely, Woody Hays has the health of the athlete paramount in mind.

Senator BAYH. You didn't listen to my question, Mr. Hart. You were too quick to draw to Mr. Hays criticism that I wasn't directing at him.

Mr. HART. Please restate the question.

Senator BAYH. You know, I must be totally frank about this, it is hard for me to believe that Woody Hays or Coach "X" or Coach "Y" is not going to be pretty much involved in stressing the importance of a given athlete in a given game and anxious to find out whether that athlete "A" or "B" is going to be able to participate and can he do it safely. I have never been involved in this kind of situation, but it seems to me as a trainer who has the responsibility of treating these athletes you are in a better position to testify than I on this——

Mr. HART. Absolutely. After every practice, after every ballgame, the team physician, the coach, and the trainer—whether it is a basketball coach or football coach—get together and discuss personnel and what is the situation or status of this particular athlete, what is being done for him from a physical therapy standpoint, from a medical standpoint, and so on and what the coach can expect from this athlete the following day.

So that coach, the doctor and the trainer are a team so to speak and all know what the other is thinking. This is how we handle it at our institution and I think again it is handled similarly at most other institutions.

Senator BAYH. Is this decision an exact science or are there marginal cases where a decision might be made if necessary?

Mr. HART. There are marginal cases in anything. The decision in a case like that would be made by the physician.

Senator BAYH. What input does the athlete have?

Mr. HART. The athlete gets involved certainly also. I would state another example, there may be a situation where the physician, the trainer, and the coach may feel that the athlete is able to participate, looking at it from a purely clinical standpoint, for example, let's say this individual has a sore knee and medically it may be all right for this individual to participate, but we have to leave this up to the boy. We do discuss this with the boy. We say, look, son, we find no reason that you should not be permitted to participate, however, it is your knee and you know how it feels. If you feel you can't go in, you don't go.

This is the athlete's decision.

Senator BAYH. Do you go one step further by saying you would see no damage that could be incurred from playing? Maybe it hurts like the blazes, but do you say we can take care of the pain and there will be no damage?

Mr. HART. This again is up to the physician and, yes; that will happen occasionally. If the doctor feels that it is safe for the boy to participate and probably safe for him to have some sort of pain preparation to make him more comfortable, this can and maybe will sometimes be done.

Again, this is a medical decision.

Senator BAYH. Now here again, the NCAA is trying to find out facts, and we are trying to find out facts. Probably both of us are sort of groping around here for direction and not wanting to make accusations that are ill-founded but really wanting to know what we can do to help the athlete, the institution, and sports in general.

You say you know of no trainer, no physician, no school that was engaged in dispensing these drugs?

Mr. HART. Correct.

Senator BAYH. That is good to know and it doesn't come as a surprise to me. Do you know of specific examples or have you personally in your own experience found examples of athletes who were using drugs—not as part of your institution or a team inspired program—but as individuals who thought that, either accurately or mistakenly they could take advantage of some kind of drug to enhance their performance?

Mr. HART. Right. I am not naive enough to think that our athletes or any one athlete cannot get these drugs on the street corners just like any other individual can.

If we are aware of it though—and it is relatively very difficult to know whether an individual is taking something—but if we are aware of it, action would be taken.

Senator BAYH. Are there specific examples where you have become aware of it?

Mr. HART. No; there are not in my own experience. I have heard of situations, but I couldn't cite anything specifically.

Senator BAYH. Well, now, all right. I am trying to determine which hat you are wearing; either that of the NCAA or of Ohio State?

Mr. HART. Well, both really.

Senator BAYH. Are there any specific examples that have been brought to your attention? I just want to find out what is done, what policy is followed when this kind of thing is uncovered?

Mr. HART. Let me say what is the policy at Ohio State. I think this is an institutional thing though. But if we are aware of someone taking some of these medications they are immediately relieved from participation in a particular sport. This is an institutional rule. This is how we at Ohio State handle it. Other schools may do it entirely differently.

Senator BAYH. Do you have specific examples of an athlete that is prohibited from competing because of it?

Mr. HART. Yes.

Senator BAYH. How many examples?

Mr. HART. One, since I have been in the business, just one.

Senator BAYH. What particular sport?

Mr. HART. Football.

Senator BAYH. You just prohibited the athlete from competing?

Mr. HART. Absolutely.

Senator BAYH. Thank you.

Mr. HART. Thank you, sir.

Mr. PRITCHARD. I would now like to ask Dr. Carl Blyth for some suggestions and recommendations to facilitate the proper use of drugs in athletic competitions. This is in response to one of your points.

Dr. BLYTH. The previous testimony and questioning and answers have really covered for me at least some of the things that I have learned and believe about this business of athletic participation and the use of drugs. Senator, you, yourself, have taken the thunder from one of my points as has Dr. Cooper.

I don't think that the literature substantiates one bit that the amphetamines would improve physical performance. I am convinced of that. The problem of misinformation in this area is related to the to the studies that were done by Smith and Beecher in 1959, in which they stated that there was some indication of improvement. I would like to state the critiques that were done found many faults with that research, and I don't think it was very good.

I further believe—and this may be in relation to what the Senator was alluding to when he talked about his relationship to athletics and physical education—I would like primarily to take a positive approach to reducing the drug menace and I believe that that can be accomplished by support of programs of athletics, both in the public schools, the colleges and the communities of this country.

I think most of you recognize the limitations on funding; some of these things have been cut back. I am convinced——

Senator BAYH. Would you give me examples of programs that have been cut back in this area?

Dr. BLYTH. Philadelphia was cut back.

Senator BAYH. These are federal programs or city or state programs?

Dr. BLYTH. I am not talking about federal programs. I am talking about the total program. I am talking about governmental agencies and private sources.

Senator BAYH. What kinds of cutback?

Dr. BLYTH. In programs for youngsters.

Senator BAYH. Were these athletic programs?

Dr. BLYTH. Athletic programs and physical education.

Senator BAYH. Were these drug treatment or drug oriented education type programs?

Dr. BLYTH. My argument, Senator, is if we have youngsters participating in athletic programs and encourage them to participate in this type of program, we won't have the problem with drugs we are finding. Specifically you are trying to get me to drive at what would I suggest to prevent them from using drugs at athletic events.

I think the State and local medical societies have to take a firmer view against the unauthorized use of drugs. I think that they have to have some guts about it and stop it where they find it. I will give you one example——

Senator BAYH. Why should that take guts?

Dr. BLYTH. Courage then.

Senator BAYH. Why should that take anything more than a normal amount of determination to stop this kind of thing?

Dr. BLYTH. Too frequently we turn our back to it I guess.

Senator BAYH. Because by gosh, if there is any area in which there is a groundswell of public opinion it is with regard to stopping drug traffic, drug abuse, drug misuse. If there is anyplace we ought to be able to command enough energy to get the job done, it ought to be in the area of athletics, which is supposed to—and I think basically does—epitomize the finest in competition and good health and living practices.

Do we have a problem there of some people who are timid in enforcing the prohibition of drug abuse in this area?

Dr. **Blyth.** Well, the implication in these kinds of hearings is that there is a problem. I am not convinced that the problem is as serious as we have been led to believe in the newspapers. I am positive from my own relationship with the public schools of North Carolina that we do not have a problem. When I speak about medical societies taking some action it is because down there this has happened and certain people have been fired; people who have used unauthorized drugs. That is what I mean.

If you let these people know that we are not going to have this kind of thing, then I think they are going to stop.

Senator **Bayh.** I concur with you. I salute you and the others in the North Carolina system for coming forward with what seems to me to be a rather resolute determination that your organization is not going to tolerate this.

The reason I wanted to pursue that, Doctor is that I don't think we need to make any apologies for establishing a standard in amateur athletics that will not permit the use of substances that are dilatory to the well-being of the athletes who participate in these programs. I see no reason myself that we shouldn't apply this across the board to amateur and professional athletics.

Dr. **Blyth.** That is right.

Senator **Bayh.** Well, I don't think we can afford to be timid in this and from your testimony you don't either.

Dr. **Blyth.** No, I don't think so. I think we should go after it.

Of course, one other point, I think that the only person that should be permitted to dispense a drug to an athlete is a physician. I disagree with even the trainer giving the drug. Some of the physicians and trainers won't agree with that, but even on prescription I would not have a trainer give a drug.

So in summary, I would say that we need increased support and promotion in the athletic programs to get kids interested in participating and to get them away from the drug scene. I think we need improved drug education programs in our schools and our institutions. I think physicians should have the primary authority and that where he has given up his authority, I think he is wrong. I think we need greater participation by both State and local medical societies in combating the effects of the use of drugs in our athletic programs in our public schools.

Thank you.

Senator **Bayh.** Thank you, Doctor. I think we have two problems, two areas of concern. One, the establishment of ethical and professional standards of conduct, which is I would think the most important thing we should direct ourselves to. And you and I and the others should make no bones about the fact that we feel that participation in this type of conduct and utilization of these types of substances for nontherapeutic purposes, is wrong; just plain wrong. I think we should take whatever steps are necessary to see that those who violate that standard are treated accordingly.

And secondly, I think we can support this finding and perhaps assist in controlling the abuse by those who might be tempted to go beyond what is proper. We should do this by educating those who would otherwise be tempted; educating them that this really doesn't make them gain anything whether they use amphetamines or steroids and may be harmful.

I noticed here in the Physicians' Desk Reference a warning saying that steroids do not enhance athletic ability. The more we can direct attention to the fact that there is nothing to be gained and a great deal to be lost by an individual athlete—be he amateur or professional, embarking on a toot of his own feeling that drugs will enhance his prowesaness and performance—I think we would be better able to control this situation.

Mr. PRITCHARD. I have one other panelist if you have time. I would like to have Jim Wilkinson speak briefly on the drug education program in the National Summer Youth Sports Fellowships program.

Mr. WILKINSON. As a staff member for the NCAA, I work as the controller. I am also assigned to the drug education committee and I am also national program director for the National Summer Youth Sports program.

For a few minutes I would like to show what this program is doing to combat the drug problem among our young people.

The National Summer Youth Sports program is a program designed for the disadvantaged youths of our country. The cost of operating this program for 40,000 enrollees is approximately $5.800,000 yearly. Of this total, the Federal Government allocates $3 million annually while institutions of higher education, the USDA, the State and local governments, private organizations and businesses and the NCAA not counting its television coverage of the program, contributes $2.800,000. The NCAA spends $50 to $60,000 annually on this program. It has TV coverage of this program. My own services to this program are free.

The participants in the program meet on our college campuses for daily instruction and competition in various sports. In addition to this, each enrollee receives a free medical exam, insurance program, a meal, transportation, and an enrichment program. We have an insurance program that protects him from the time he leaves home until he gets back and a hot meal in most institutions. Transportation, and this enrichment program.

For a minute or two I would like to talk about this unique enrichment program.

Each project devotes a minimum of 3 hours per week to drug abuse education; to instruction concerning job responsibilities and education and career opportunities; and to activities designed to promote sound health and nutrition practices.

In the drug phase of the program, each enrollee is given drug educational materials, lectures and many other experiences designed to combat drug abuse.

The continuation of this program in future years will do much to help educate the youth of our country on drug abuse.

Since the inception of this program in 1969 we have reached over 140.000 participants, ages 10 to 18 with that drug program. So this summer we anticipate another 34,000 or 35,000 youngsters in 105 institutions will receive more drug education.

At the present time there are 148 more institutions waiting to participate in these programs. We have been informed that this may be the last year for this program unles we can get new legislation. This is a quality program that needs to be expanded and not ended. The National Summer Youths Sports program continued and supported would have great impact upon the attitude and accomplishments of our youth, and help them join the mainstream of society without a monkey on their back.

Thank you.

Senator **Bayh**. Thank you, Mr. Wilkinson.

Let me ask you about that program. You talk about drug education. Now are you educating the young athletes and participants in the dangers of all kinds of drugs or is this an antiheroin type program?

Mr. **Wilkinson**. All types of drugs. We leave the information or instruction of this to each project administrator on each campus. In a lot of situations we have brought people in who have been on drugs before to come in and talk with the kids and also people from the Bureau of Narcotics and Dangerous Drugs who come in to talk with the kids. We put educational material together and use it in the schools. Anything that would make them aware of the problems that exist in our country would be used.

Senator **Bayh**. In other words, they are told that it is not only a problem with the heroin monkey, but the little red or yellow jacket or the Christmas tree or whatever it might be that they could pick up on the streetcorner; that they are equally as dangerous?

Mr. **Wilkinson**. That is right.

Senator **Bayh**. What Federal funds are used to support these programs?

Mr. **Wilkinson**. For the last 4 years the financing program came from the OEO program. At the present time this program is out of existence.

Senator **Bayh**. Let's be more specific. Some of us in Congress feel that when a Federal court says it is still in existence, then it is still in existence even if the President would wish it away.

You are saying funding from OEO has made it possible for you to reach all of these young underprivileged youngsters to participate in this kind of program and you feel that it has been helpful and would be helpful in keeping them out of the drug scene?

Mr. **Wilkinson**. Yes; I do.

Senator **Bayh**. And if we are unable to continue the OEO program, you feel you will have to cancel all of those programs?

Mr. **Wilkinson**. I would say so or most of them because right now the colleges are doing what they can without any money to continue this program during the fall months. This program, this $3 million that we get directly from the Government, well, we can only operate in the summertime.

There are institutions right today that are involved in this program who do things on their own over the $3 million. They take it upon themselves to begin in September and work with these kids all during the year on a minimum type budget.

Senator **Bayh**. And how many youngsters do you think you will reach during this program this year?

Mr. **Wilkinson**. We anticipate 33,000 or 34,000 youngsters that will be reached. Our daily average attendance in this program last year was about 33,000 youngsters. We projected enrollment last year—well, as a matter of fact, we examined 40,000 youngsters last year in the program.

Senator BAYH. Doesn't it strike you as a little bit inconsistent to make policy pronouncements about the evils of drug traffic and the disastrous effects on young lives if they are subjected to a lifetime of the drug habit on the one hand, and on the other, to be in favor of cutting out those programs that make it possible for you and others like you around the country to reach 33,000 and have a positive effect in keeping these young people out of the drug scene? Isn't that a little inconsistent?

Mr. WILKINSON. I don't think so.

Senator BAYH. Let me rephrase the question before you go on record as saying that. Because the question was rather extended.

Do you feel it makes sense on the one hand to say that it is bad for the country to abuse drugs and that we have to do something about stopping the traffic in drugs and the increase in drug addiction, to take that position on the one hand, and then to be in favor of cutting out funds that make it possible for you to reach young people and convince them not to participate in drugs?

Mr. WILKINSON. No.

Senator BAYH. Thank you. Those were your comments and not influenced by my rephrasing the question?

Mr. WILKINSON. Right.

Senator BAYH. All right. Sometimes I get involved in questions that get strung out to the point that the question doesn't make sense. Well, that may be a bad admission.

Gentlemen, you have been very helpful. Nobody else has any comments to make?

Well, we hope you will let us have the results of the study you are participating in.

Mr. PRITCHARD. Yes, sir. Thank you.

[Mr. Pritchard's prepared statement with exhibits A-J is as follows:]

PREPARED STATEMENT OF ROBERT W. PRITCHARD, CHAIRMAN, NATIONAL COLLEGIATE ATHLETIC ASSOCIATION, DRUG EDUCATION COMMITTEE

My name is Robert W. Pritchard. I am director of athletics at Worcester Polytechnic Institute in Worcester, Massachusetts. I serve as chairman of the National Collegiate Athletic Association's Drug Education Committee.

Joining me on this panel are three other members of that Committee. Dr. Donald L. Cooper is team physician at Oklahoma State University. Dr. Cooper also served as team physician for the United States Olympic Team at the Games in Mexico City. Alan Hart is head trainer at Ohio State University and will serve as a trainer for the United States Team at the World University Games in Moscow this summer. James Wilkinson of the NCAA administrative staff is director of the National Summer Youth Sports Program and serves as liaison between our Committee and the NCAA Executive Offices in Mission, Kansas.

Also with us today is Dr. Carl S. Blyth, chairman of the Physical Education Department at the University of North Carolina and administrator of the NCAA Committee on Competitive Safeguards and Medical Aspects of Sports.

In the invitation to testify at these hearings, Chairman Bayh outlined five areas relating to the question of drug abuse by athletes regarding which the views and data of the NCAA were invited. Several of these areas will be discussed by other members of this panel. I will begin by outlining the NCAA's policy condemning drug abuse by athletes, and the programs which it has undertaken in this area.

The NCAA's policy is clearly set out in the following resolution adopted by the 1971 NCAA Convention:

"NONTHERAPEUTIC DRUGS

"SECTION 1. The NCAA condemns the employment of nontherapeutic drugs in any of its member institutions or affiliated organizations by staff members who authorize or allow their student-athletes to use such drugs, and by student-athletes who do use such drugs.

"SEC. 2. Staff members or student-athletes at member institutions who use drugs in a nontherapeutic manner in any athletic program are in violation of the principles of ethical conduct of the NCAA.

"SEC. 3. All member institutions, their athletic staffs and their student-athletes should assert aggressively their wholesome influences in combating usages of nontherapeutic drugs among the nation's youth."

The NCAA's efforts against drug abuse are proceeding on these fronts: (1) education; (2) assessment of the nature and extent of drug abuse by athletes; and (3) development of an enforcement program.

I. EDUCATION

The NCAA Drug Education Committee was formed by the NCAA Council in August, 1970, because of concern over apparently increasing drug abuse by young people, and it has taken an active role in the athletic anti-drug program.

We are proud of the program we have developed, but we realize a great amount of work is ahead if we are to control drug abuse.

The problem of drug abuse is one of the biggest challenges this nation is facing. The lives of many young people depend on the solution. The situation is critical.

Abuse of drugs, always widespread but covert, has become a matter of public fact in the 1970's. It is impossible to foresee a time when it will be eliminated, but we believe that control of drug abuse can be achieved. In order to accomplish this, however, the institutions of society being affected by the problem must accept a responsibility for its solution.

For this reason, we believe the NCAA Drug Education program is of critical importance as a practical approach and, furthermore, as an example for other institutions to follow.

The initial approach taken by the NCAA Drug Education Committee was an educational poster and media campaign. Since 1970 more than 350,000 posters and many news articles have been printed and distributed to the following organizations:

Members of the United States Congress.
More than 700 members of the NCAA.
Entire membership (approximately 500 institutions) of the National Junior College Athletic Association.
National Federation of State High School Associations which is composed of about 24 or 25,000 high schools in the United States.
National Association of Basketball Coaches.
Boys Clubs of America.
California Junior College Athletic Association.
Fiesta Bowl.
Bureau of Narcotics and Dangerous Drugs.
Pop Warner Football League.
Girl Scouts, Boy Scouts, State and Local Governments.
Health Agencies.

I would like to submit for the record and for the Subcommittee's information copies of the various posters and samples of news articles we have published in game programs and newspapers throughout the United States. (Exhibits A and B)

The posters are produced three times yearly. Each issue of 30–40,000 posters projects the sports activities for one of the three sports seasons during the school year, one for fall, one for winter and one for spring. These posters have become a familiar sight in high schools and on college campuses throughout the country.

We have written and published a pamphlet entitled "The Coach: Drugs, Ergogenic Aids and the Athlete." (Exhibit C)

Through the cooperation of the Bureau of Narcotics and Dangerous Drugs, we printed 250,000 copies of the pamphlet with a goal of trying to get them into the hands of every coach of amateur teams in this country. The distribution was as follows:

Distribution

High schools	165, 000
National Junior College Athletic Association	10, 000
4-year colleges	15, 000
Fiesta Bowl	5, 000
Sold	3, 000
Distributed to superintendent of schools in 75 school districts in the United States where drugs seemed to be a problem	25, 000
Bureau of Narcotics and Dangerous Drugs	2, 000
Members of Congress	1, 000
California junior colleges	2, 000
Football coaches	3, 000
Basketball coaches	3, 000
College commissioners	1, 000
Donated to organizations—such as: YMCA's, PTA's, NSYSP, State and local governments, Boy Scouts, Girl Scouts, U.S. Military and many others	10, 000
Volunteer Service Bureau, Kiwanis, Human Resources Organization, Boys Clubs, American Medical Association and other groups	4, 000
Miscellaneous	1, 000
Total	250, 000

Later we had a second printing of the pamphlet with a distribution of 50,000. (Exhibit D)

As an example of the reaction generated by the pamphlets, I would like to present a column by the National Interscholastic Swimming Coaches Association of America. (Exhibit E)

Once again, through the cooperation of the Bureau of Narcotics and Dangerous Drugs, we printed more than 40,000 copies of a drugs identification chart for display in locker rooms and training rooms. The chart was widely distributed among four and two-year colleges and high schools. (Exhibit F)

In 1972, we expanded our poster, news article and pamphlet campaign by publishing and distributing more than one million copies of a drug flyer entitled "Get High on Sports, Not Drugs." (Exhibit G)

This publication, containing a feature article prepared by Dr. Hardin Jones of the University of California, Berkeley, and a member of our Committee, was designed to provide information on the problems of drug abuse for the parents of young athletes.

Distribution

High schools	717, 490
Colleges and universities	200, 000
National Junior College Athletic Association	75, 000
Fiesta Bowl	50, 000
California Junior College Association	25, 000
Bureau of Narcotics and Dangerous Drugs	10, 000
Congress	2, 010
Drug Education Committee	500
Total	1, 080, 000

Financial support for this pamphlet was provided from the Fiesta Football Bowl of Phoenix, Arizona; National Federation of State High School Associations; and the Bureau of Narcotics and Dangerous Drugs. Incidentally, I want to compliment the Fiesta Football Bowl Committee of Phoenix, Arizona, which this year completed a pledge of $30,000 to the NCAA Drug Education Committee. (Exhibit H)

In addition to the printed materials we provide, we have produced spot television promotions which have appeared regularly during the NCAA college football telecasts. These spots have featured outstanding college athletes such as Arizona State's quarterback, Danny White and Florida State's quarterback, Gary Huff, as well as outstanding collegiate coaches such as Penn State's Joe Paterno. A "rap session" among a group of young people at St. John's University in New York was also a part of the series. Here are some photographs taken from the film clips.

Our Committee members have also spoken to groups of coaches and trainers about drug education as well as to medical symposiums, civic groups and convocations on college campuses. Dr. Cooper has been especially active in this program.

I would be remiss not to point out the NCAA's participation in conducting tours to the Far East and Europe where many outstanding college athletes and coaches used their summer and Christmas vacations to talk with our servicemen. One of the most discussed topics was drug education. The NCAA currently is conducting tours number 8 and 9 with the Department of Defense and two tours are being co-sponsored with the U.S. Pacific Air Force this summer.

II. ASSESSMENT OF THE PROBLEM

The NCAA is presently in the midst of a project designed to develop hard information on the questions whether there is a drug problem among college athletes and what the nature and extent of the problem are if, in fact, one exists. From among member institutions which volunteered to cooperate, the NCAA selected 143 representative colleges to which "blind" questionnaires entitled "NCAA Drug Use Questionnaire" have been sent. This questionnaire, copies of which we are submitting to this Subcommittee (Exhibit I), is to be filled out anonymously by student-athletes at the selected institutions.

In all, 22,600 individual questionnaires have been sent, to institutions which include both large and small colleges, both public and private institutions and colleges located in each of the states. The competed replies are being sent to a computer service center in Memphis, Tennessee, for compilation of the data.

This survey is designed to obtain information indicating the types of drugs used by college athletes, and the extent and degree of usage in college athletics. We feel that we are developing the most meaningful information ever obtained in this area, and that it should be invaluable in assessing the need for and design of future NCAA programs. We will provide this Subcommittee copies of the results of the survey once they have been compiled.

III. DEVELOPMENT OF TESTING AND ENFORCEMENT PROGRAMS

At the 1973 NCAA Convention, the member institutions amended the Association's Bylaws to establish legislation in addition to their previously adopted policy declaration. (Exhibit J) Bylaw 4, Section 2 reads as follows:

"Student-athletes competing in NCAA championships shall not use any unauthorized drugs which may endanger their health or safety or which may seemingly give an unfair competitive advantage to an individual competitor. This does not preclude the use of drugs prescribed by a physician in the course of medical treatment. (Adopted: 1/13/73)

"(*a*) The Council shall, from time to time after enlisting expert advice and study, enumerate the drugs which may not be used. (Adopted: 1/13/73)

"(*b*) The Executive Committee may authorize urinalysis or other methods for testing student-athletes who compete in NCAA championships to determine the extent of drug usage therein. (Adopted: 1/13/73)"

We are presently in the process of determining which substances the NCAA Council will officially designate as drugs which "may not be used." We also intend to institute a program of urinalyses of athletes competing in NCAA championships. Testing will start in the fall of this year. In this first effort, we do not intend any punitive measures for any individual or college. We plan only to gather facts which we hope will provide us with future direction.

CONCLUSION

The NCAA, in general, and the NCAA Drug Education Committee, in particular, stand ready to cooperate with any valid and responsible effort to deal with this issue.

With your permission, I would like to ask the members of this panel to speak directly to the other specific areas outlined by Chairman Bayh in his invitation to testify.

Dr. Cooper will focus on the ethical considerations involved in the use of nonrestorative drugs, including stimulants, such as amphetamines and anabolic steroids.

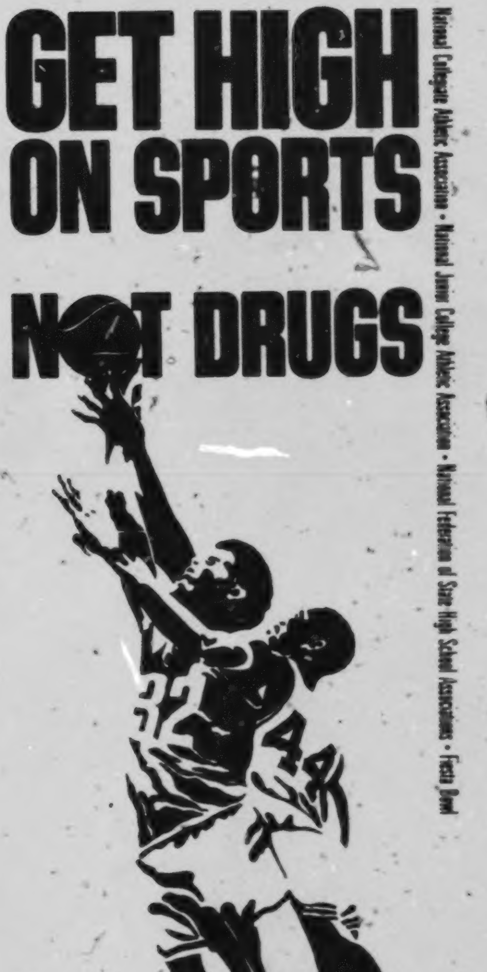
Mr. Hart will discuss the assessment of the extent of the use of additive and restorative drugs by athletes.

Dr. Blyth will offer some suggestions and recommendations to facilitate the proper use of drugs in athletic competition.

Mr. Wilkinson will discuss the drug education program in our National Summer Youth Sports Program which is conducted at 105 NCAA colleges and universities with an enrollment of 40,000 youngsters.

I attempted to cover the other points Chairman Bayh requested we review, but if other members of our panel would like to offer additional comments, I invite them to do so.

[Exhibit A]


GET HIGH
ON SPORTS
NOT DRUGS
National Collegiate Athletic Association • National Junior College Athletic Association • National Federation of State High School Associations • Fiesta Bowl
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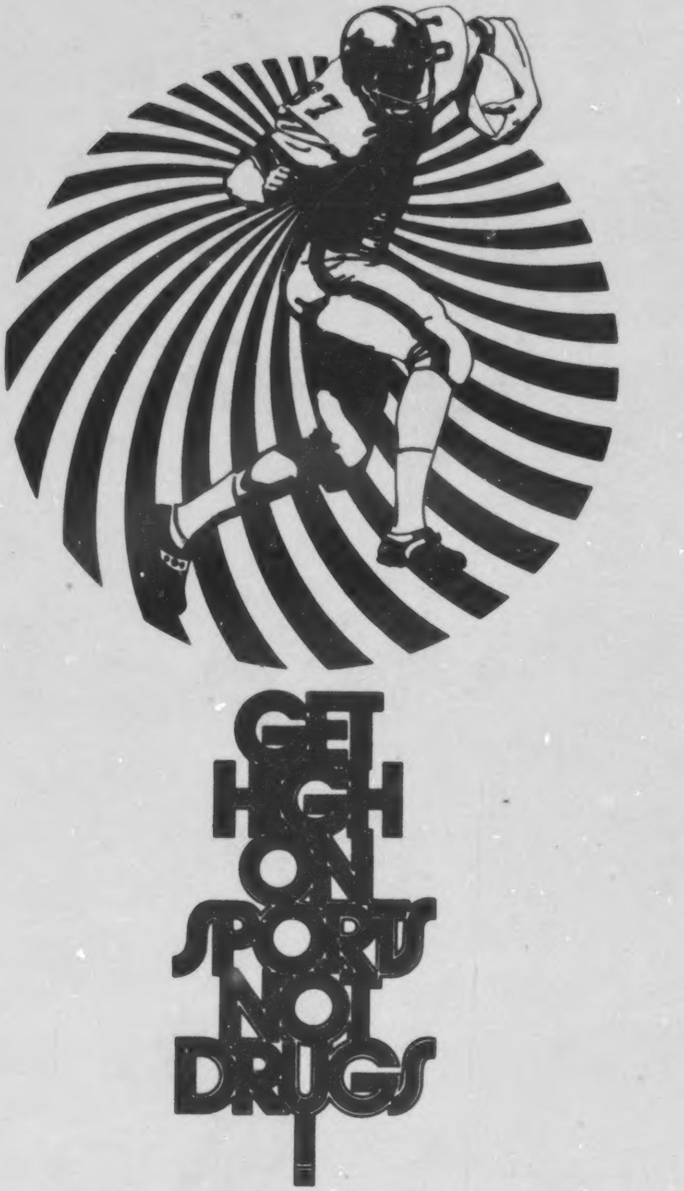
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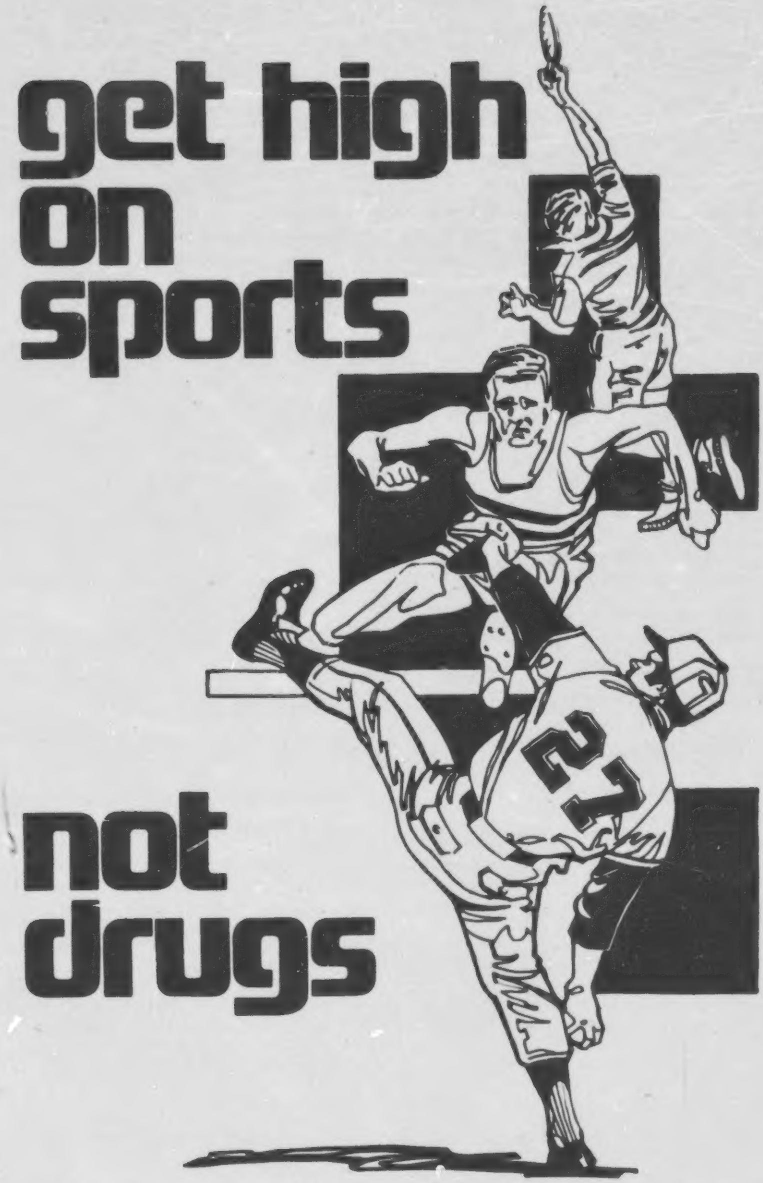
get high
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27
National Collegiate Athletic Association • National Junior College Athletic Association • National Federation of State High School Associations • Fiesta Bowl

[Exhibit B]

"Drugs Have No Part in Sports or Life" Say Prominent College Athletes and Coaches

PETER ROBES, University of Wyoming

"We are brought into this life with a wonderful body. We can accomplish many things with it, but only if it is used, not abused. Our bodies, if destroyed by excesses of any kind, will be of no use to us or anyone else. There are enough activities for today's young person . . . or older one, for that matter . . . to occupy his time. If sports can be built as a life-time ideal, then all of us would have something to turn to besides drugs, or other harmful activities"

Peter Robes, junior skier, Etna, N.H. Physical education major. minor in biological sciences; plans to teach and coach skiing on college level; won NCAA ski jumping title and All-America honors, 1968; third in nationals in 1969 and 1971; second in U.S. Ski Jumping Championships, 1970, participated with U.S. Ski Team on European tour.

DAVE RIEHL, Ithaca College

"Drugs, just like many other things, become harmful when misused.

"Some drugs have been *proven* to be dangerous if used at all—this case speaks for itself.

"With regard to the 'soft drugs,' I feel that a certain caution should be used when dealing with an unknown—both by the people who would use them *and* by the people who would use strong measures to ban their use.

"One should broaden one's physical and mental facilities as much as possible in a lifetime; but to use drugs (and, for that matter, one's athletic abilities) as crutches to cover up one's inadequacies in other aspects of life is both foolish and dangerous."

Dave Riehl, junior soccer goalie, Colton, N.Y. Started every game as a sophomore, posting 1.10 goals against scoring average. Accounted for three shutouts. Named to six all-opponent teams. Rated by Coach Forbes Keith as best goaltender in 20 years at Ithaca. Physics major with 3.96 grade-point average.

GARY HALL, Indiana University

"Perhaps the best way to approach the problem of drugs in our society is to look for changes which may have caused the problem. Only after solving the problems leading to drug problems can the drug problem, itself, really be solved.

"One of the biggest challenges this country faces is a declining standard of morals. Many media, such as magazines, books and the cinema, influencing our society have become infested with vile material. By accepting this 'smut' we are accepting lower moral standards.

"The danger and consequence of changing standards is that too many people can no longer determine what is right from what is wrong, or even what is normal from what is abnormal. And, unfortunately, far too many have accepted drugs as a normal way of living.

"It's tragic that such an unnatural and dangerous thing as using drugs could ever become accepted in such an 'intellectual' society."

Gary Hall, junior swimmer, Garden Grove, Calif. Helm's North American Athlete-of-the-Year, 1970. World Swimmer-of-the-Year, 1969 and 1970. World record holder 200 butterfly, 400 individual medley and 800 freestyle relay. Won three NCAA titles, 1971. Has won total of 13 national titles and an Olympic silver medal. Recent transfer from honors program in physics to pre-medicine with 3.81 g.p.a.

JOHN BROWN, University of Missouri

"Sports have been good to me—and for me The drug scene is only for losers and dropouts from the world."

John Brown, junior basketball player, Dixon, Mo. Missed first eight games as sophomore with injury. Came back to score 14 points against NCAA champion UCLA. Team's second leading scorer. Colorado All-America Cliff Meely was only other player besides Brown who ranked in four offensive categories in the Big Eight. Averaged 54.6 per cent from the field and 74.8 from the free throw line.

JOHN REAVES, University of Florida

"Drugs only keep you from facing reality. If you want to make something of yourself, to do your own thing as an individual, you have to face everything as it comes in order to gain confidence in yourself as a person. This is not possible when drugs are involved."

John Reaves, senior quarterback, Tampa, Florida. Holder of 11 Southeastern Conference passing records. Passed for 37 TD's in two seasons. Frequent speaker at youth functions. Was one of two Florida players to trek 20 miles for March of Dimes Walkathon. Majoring in marketing.

DAVE MORTON, University of Texas, Austin

"I think that when you use drugs, you are copping out on yourself. You are admitting that you don't have the courage, or the imagination, to face reality. I would rather meet problems head-on and try to solve them than to run away and hide in the surreal world of drugs."

Dave Morton, senior trackman, Branch, Texas. Team co-captain. Southwest Conference record-holder in 440 with time of 44.5. Anchor man on record SWS mile relay team, clocked at 3:07. SWS 880 champion last year. Anchor man on conference mile relay championship team three years in a row.

YOSHIRO FUJITA, Oklahoma State University

"Competitive athletics have permitted me to lead an active and healthy life. It has given me the strength to meet other challenges. It would be foolish to destroy all of this with narcotics. The same goes for smoking."

Yoshiro Fujita, senior wrestler, Hachinohe, Japan. Won NCAA title at 126 pounds in 1971, completing an undefeated (28–0) season. Closest match in the championship was an 11–2 decision. Attended Japan's Senshu University for one year before coming to Oklahoma State. Majoring in education.

JOE PEYTON, University of Puget Sound

"Statistics on drugs give evidence that the user is not in a complete state of physical, mental or social well being. An athlete, striving to perform at his best, which should be the aim of every athlete, never should consider anything which might impair his performance."

Joe Peyton, head track coach. Won 11 letters at University of Puget Sound from 1963–66. Only season he didn't receive a letter was during one basketball season which he sat out due to a broken leg suffered in football. Little All-America football selection. Set school records in high jump and long jump. A former Green Beret sergeant. Earned B.A. and M.A. in Physical Education from UPS.

BOBBY MAJORS, University of Tennessee

"The use of drugs, very common today, is something we must face up to. The man who can do without drugs is much better off than the man who uses them. Drugs are harmful to the body and may damage the brain. Be a better man and don't take a chance with drugs."

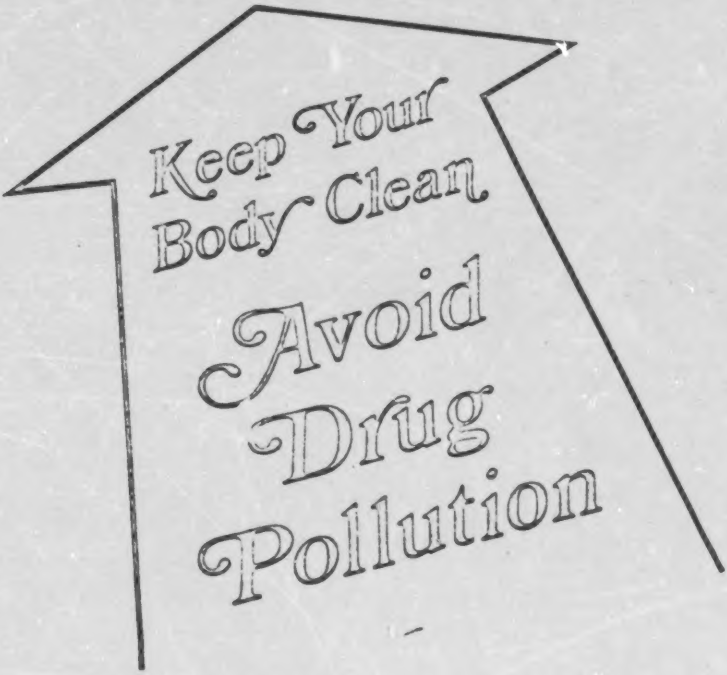
Bobby Majors, senior defensive back, Sewanee, Tenn. Led nation in pass interceptions with 10 in 1970. Helped Tennessee establish Southeastern Conference record with 36 aerial thefts. Both kicks and returns punts. Older brothers John, now coach at Iowa State, and Bill, also starred for Vol eleven. Majoring in education.

CARL WALLIN, University of Iowa

"As a gymnast, I've flipped over lots of things, but I've always maintained a strong posture against drugs. Drugs and athletics do not mix."

Carl Wallin, sophomore gymnast, Hinsdale, Illinois. One of Iowa's outstanding performers as a freshman. Specialized in high bar. Runnerup in that event at Big Ten Invitational meet. 3.25 grade-point average. Majoring in mathematics.

Join the Ecology Movement


Keep Your
Body Clean
Avoid
Drug
Pollution

COLLEGE ATHLETICS STEPS IN TO BATTLE DRUG SCENE

"Americans put out the most expensive urine in the world. It is a beautiful bright yellow urine loaded with excreted vitamins."

The speaker was Dr. Donald L. Cooper, an Olympic team physician and the team physician at Oklahoma State University, and his subject was ergogenic aids and drugs in athletics—a speech that he has now delivered to many of the nation's coaches, athletic associations and other interested groups.

As part of the NCAA's Drug Education Program, Cooper delivered his speech to over 1600 delegates and coaches at the January NCAA Convention, expounding on the hazards of many of the ergogenic aids used by athletes, and their overuse. He has traveled extensively since.

The NCAA has taken an active rolle in the athletic anti-drug program. The NCAA Drug Education Committee first met October 21–22, 1970, and in the short period of time since that date, it has provided the impetus for one of the NCAA's most comprehensive programs.

The Committee, of which Robert W. Pritchard, director of athletics at Worcester Polytechnic Institute (Mass.), is chairman, is composed of Dr. Cooper, Thomas J. Hamilton, immediate past Pacific-8 Conference executive director; and James H. Wilkinson, NCAA. It was formed by the NCAA Council last August "because of the rising public concern over drug abuse by young people and athletes," Wilkinson said.

Cooper is the expert among the group, and has studied drug and ergogenic aid use by athletes perhaps more than any other physician in the country.

UNLIMITED DEFINITION

"The definition of ergogenic is very unlimited," Cooper says. "According to Doriands Medical Dictionary it is defined simply 'anything tending to increase work output.' "

Cooper categorizes athletic ergogenic aids into four main groups, emphasizing that many are dangerous and that many don't do any good at all.

"This entire area of ergogenic aids and drugs has always fascinated us. We human beings are notoriously on the prowl for a 'gimmick' or an 'easy way' or that 'special something extra.' There are no short cuts to excellent performance, but I guess it is the nature of the beast to keep striving to find some help."

The four ergogenic categories outlined by Cooped are physical and mechanical, nutritional, pharmacological (drugs) and psychological.

The pharmacological ergogenic aids are the most dangerous and potentially harmful. Mainly two families are used—the amphetamines and anabolic androgenic steroids.

The anabolic steroids taken by weight men and the amphetamines and related "speed" and "uppers" are the drugs that Cooper says are most commonly used by athletes.

Cooper and Dr. Hardin Jones, also an NCAA drug panelist, from the University of California Berkeley, say the amphetamines have paradoxical dangers.

"When an athlete takes an amphetamine, he thinks he's the greatest," Cooper said. "A pitcher may think he's really throwing hard, but in reality he's throwing softballs up there and probably just gave up four home runs. His performance is probably worse, but he doesn't think so," Cooper commented.

"The drug is used," Jones said, "to speed up the nerve-muscle reaction, but it has a reverse effect on athletes.

"In any athletic event, the capacity of the adrenal gland to put out adrenalin is important to any athlete. But an athlete has lost some control over the mobilization of adrenalin if he takes an amphetamine before an event. And over a period of time, it may cause other difficulties."

ANABOLIC STEROIDS

The anabolic androgenic steroids, the other form of drugs taken by athletes, are used to gain weight at an extremely fast rate.

Used medically, they help the body retain protein and nitrogen, and help the building of muscle tissue.

Other steroids are given to patients with other deficiencies.

"The only way John F. Kennedy could be President was to take cortisone," Cooper said. "He had Addisons Disease and had a disfunction of his adrenal gland.

"You can give anabolic steroids to a person who is 93 pounds to start with. But to a normal human being? We just don't know the total effects. Studies done over a short period of time show there have been no adverse effects with normal dosages. But athletes sometimes are taking two, five and ten times the normal dosage."

Some studies indicate that athletes may gain weight, but don't increase their strength and quickness.

"The problems started with the weightlifters and the muscle beach boys—the body beautiful people. A doctor at UCLA conducted a study, and concluded that anabolic androgenic steroids caused most people to gain weight, but did so because the body retained fluids. His study showed that there was no increase in speed or strength."

Jones says that the steroids are the main drugs being misused.

"It has been proven that they may cause testicular atrophy and hypertrophy of the prostate gland," Jones said.

"I consider that a pretty big danger signal."

CORTISONE

He also said that cortisone is misused by some athletes, doctors and trainers.

"It is used to get an athlete back in action faster," he said, "but sometimes he plays before the actual healing takes place."

The studies into drug abuse by athletes are new and, as of yet, meaningful statistics on the maount of drug abuse by collegiate athletes are not available.

Cooper has said that a few coaches give them out like candy, and that there is probably a lot of under-the-counter traffic that "we don't know of."

"But I don't think, and can't believe, too many reputable physicians or trainers are dispensing them. Reports alleging many athletes are using drugs really aren't too scientific in their evaluations.

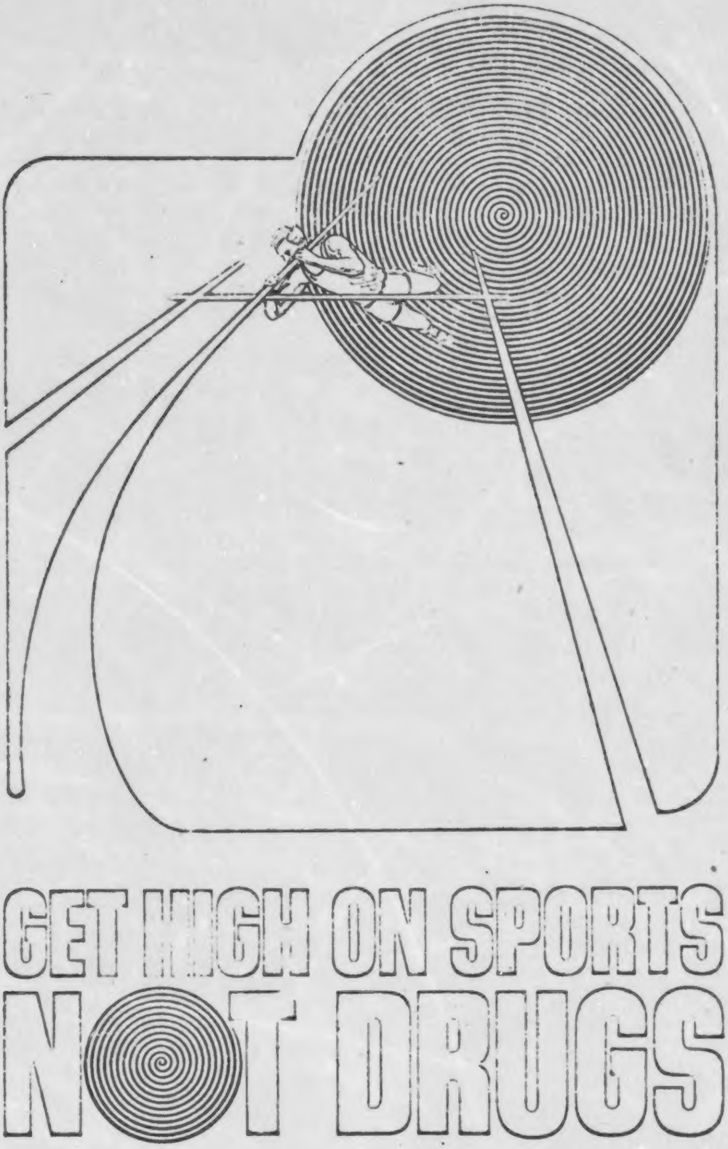
"More are using drugs than we probably think," he said. "But they do it on their own. Like the drug scene everywhere, you don't see many drug abusers. I think most of the athletes are getting the drugs from the outside.

ETERNAL HOPE

"Hope always springs eternal that someone will find something that will make the weak stronger, and the slow faster. But there's one fact that I think should be set very straight: To our knowledge, a normal, well-fed human being can never be improved by any drug.

"Of all the people taking them, the one who holds the world record in the shot put doesn't take them. Randy Matson used to at one time, but he went off them. That's when he set the world record.

"I took care of Randy, so he's a personal friend of mine. A lot of other weight men are getting bigger, but this doesn't mean they're getting quicker and stronger. If they are, why aren't they catching Matson?"


GET HIGH ON SPORTS
NOT DRUGS

NATIONAL COLLEGIATE ATHLETIC ASSOCIATION · NATIONAL JUNIOR COLLEGE ATHLETIC ASSOCIATION · NATIONAL FEDERATION OF STATE HIGH SCHOOL ASSOCIATIONS

ABOUT DRUGS:

DR. DONALD L. COOPER

"A Normal, Well-fed Human Body Can Never Be Improved by Any Drug."

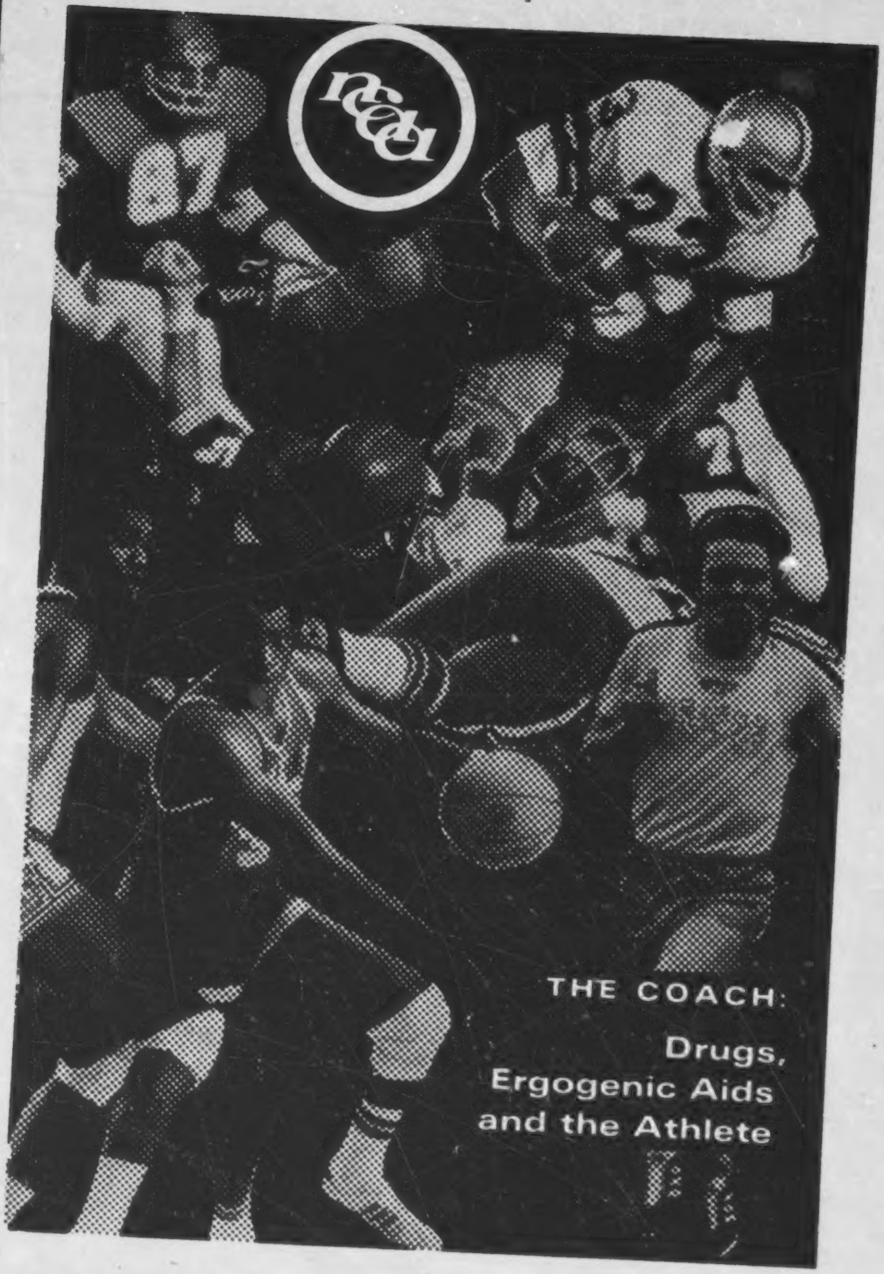
"Write Off Drugs, Right On Reality."

"Drugs Destroy Your Ability to Compete, in Sports or in Life."

"Throughout History, Human Beings Have Searched for a Physical Gimmick, But There Is No Shortcut to Excellence Through Drugs."

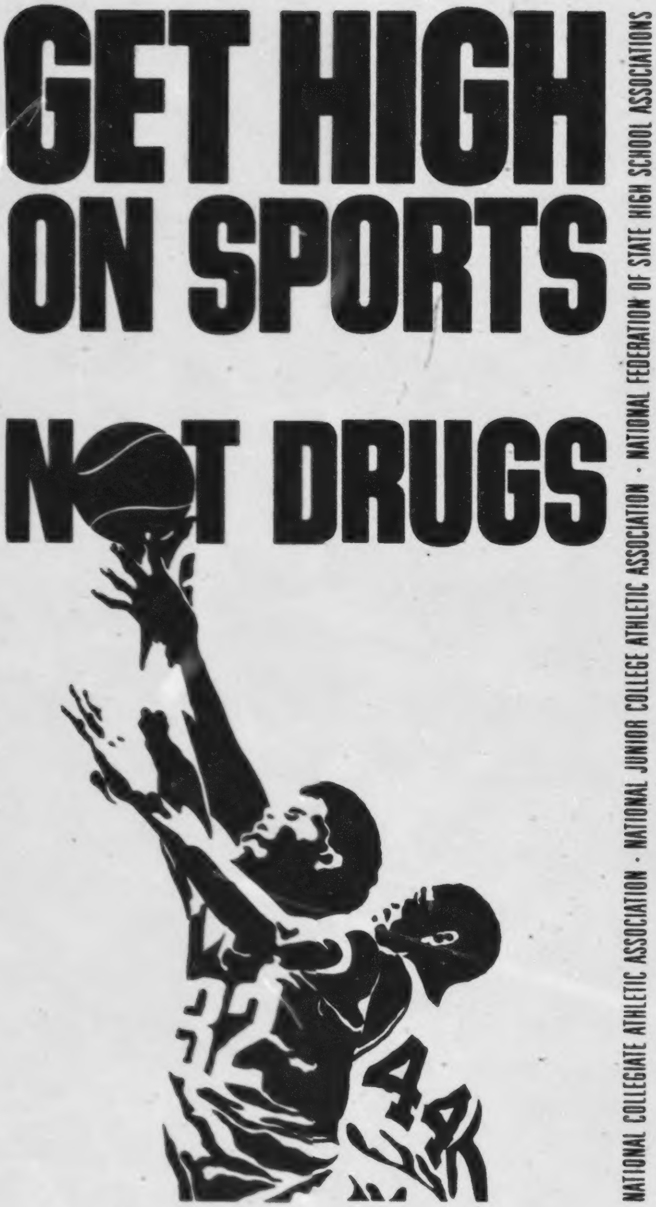
Dr. Donald L. Cooper is one of the nation's foremost authorities on drug abuse by student-athletes. He has spoken to coaches, athletes and other interested parties on the subject all over the country. He is the team physician at Oklahoma State University, and also served as a U.S. team physician on the 1968 U.S. Olympic team. He is a member of the NCAA Drug Committee and is chairman of the NCAA Committee on Competitive Safeguards and Medical Aspects of Sports.

[Exhibit C]



THE COACH:

Drugs, Ergogenic Aids and the Athlete


GET HIGH
ON SPORTS
NOT DRUGS
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NATIONAL COLLEGIATE ATHLETIC ASSOCIATION · NATIONAL JUNIOR COLLEGE ATHLETIC ASSOCIATION · NATIONAL FEDERATION OF STATE HIGH SCHOOL ASSOCIATIONS

Why a Drug Pamphlet for Coaches?

Dear Coach:

As a coach, you should arm yourself with as much information on the drug problem as you possibly can. We want you to be able to "rap" with youth. Understanding is the basis of all solutions. To recognize the symptoms and evidence of drug usage, one must know the tell-tale signs of experimentation and realize someone is in trouble.

Further, how do you handle these problems? To whom do you talk? In whom should you confide? How do you react—do you kick the boy off the squad, or is that the worst thing you can do? We think this pamphlet will be helpful to you.

Robert W. Pritchard
Chairman, NCAA Drug Education Committee
Worcester Polytechnic Institute

Other Committee members:

Dr. Donald L. Cooper
Oklahoma State University
Admiral Thomas J. Hamilton
retired Pacific-8 Executive Director
James H. Wilkinson, *NCAA*

Gentlemen:

First, let me convey the appreciation of the Bureau to the NCAA and its officials for making possible the publication of this booklet and assisting us in distributing it to you.

Our nation has always been proud of its athletes and of their performances in all kinds of competition. Millions of Americans, young and old, who participate in sports of all kinds have been justly proud of their sportsmanship.

Today, a problem has arisen in a minority of athletes. The "win at any cost" attitude has caused them to turn to the use of drugs in an attempt to increase performance. This has sometimes resulted in injury to athletes. However, even if no apparent physical harm results, the damage to the athlete, ethically and psychologically, can be severe. And the damage to the American concept of sportsmanship may be irreparable if such misuse of drugs continues and increases.

Coaches, whether they work with high school and college youth, professional athletes or little league youngsters, are educators and builders of character. It is not enough to say, "I never permit my boys to use drugs." I urge you to take the next step: To personally commit yourself to educating youth in the proper use of drugs, and to seek help for the few on your team who may need it.

The available evidence indicates that there is no real advantage for the athlete who tries to increase ability through drugs. The medical profession, coaches and trainers throughout the world consider it very unsound practice to utilize drugs to enhance athletic capability. I ask you to make that extra effort to see that they escape the trap which drugs present to them. They, and our country, need your help.

John Finlator,
Deputy Director of the Bureau of Narcotics and Dangerous Drugs.

Drugs and Athletics . . .

Randy Matson, perhaps the greatest weight thrower in the history of track and field and currently the world record-holder in the shot put, said he tried anabolic-androgenic steroids in 1964 and 1965.

This type of steroid has been used by athletes to supposedly make them grow stronger and gain weight at a faster rate.

"But I didn't see any outstanding results when I took the drugs," Matson said. "I didn't gain any weight, I didn't throw farther with them, as far as I could tell, so I stopped using them."

He then set the world record in the shot put of 71′-5½″ in 1967.

"Of all the people taking them, the world record holder in the shot put doesn't use them," commented Dr. Donald L. Cooper, a former Olympic team physician and team physician at Oklahoma State University. "A lot of weight men are getting bigger, but this doesn't mean they're getting quicker and stronger. If they are, then why aren't they catching Matson?"

Seeking to improve athletic performance, athletes have experimented with an endless variety of drugs. But based on scientific evidence, it is very difficult to find anyone who has been safely improved.

The taking of pharmacological aids has proved to be a hazardous venture for some—leading to permanent injury and death. And yet to be known are the long-range effects that the drugs might cause.

There are still many unanswered questions in the area of the athlete and drugs. A lot of the conflicting opinions are not based on scientific evidence but on personal opinion. It is the hope of all those concerned with this project that some basic lines of objectivity may be established and that fundamental principles of human physiology will be understood. The final answers are not yet available, but to a great extent what coaches and athletes do in the next few years can set the pattern for the expanding and continued growth of excellent athletic programs.

Some Basic Concepts

"Hope always springs eternal that someone will find something that will make the weak stronger, the slow faster and the dull brighter. But there's one overriding fact that I think should be continually reemphasized: To our knowledge, a normal, well-fed human being can never be safely improved upon by any drug."

Dr. Donald L. Cooper
Olympic Team Physician—Mexico City, 1968
Team Physician, Oklahoma State University

The entire area of ergogenic aids and drugs always has fascinated people. Human beings are notoriously on the prowl for a "gimmick" or "an easy way" or that "special something extra". There are generally no shortcuts to an excellent performance, but apparently it is man's nature to keep striving for help—"a fair advantage."

The imagination can be challenged by the definition of the word "ergogenic." It is short, yet unlimited. According to *Dorland's Illustrated Medical Dictionary*, it is defined simply as "anything tending to increase work output."

Within the broad limits of this definition there are many shady areas in the consideration of ergogenic aids and drugs. The more they are explored, the more complicated and conflicting are the reports.

History of Drugs in Athletics

In sports, the first recorded death from drug usage was in the late 1890's, when a British cyclist died from using amphetamines. This kind of tragic occurrence has been repeated with numerous drugs on several occasions since then. One consistency has been demonstrated throughout: more losers use drugs than winners. The drug users know they have not made the proper effort in training and are far more prone to look for the "gimmick" or artificial help that isn't there.

No country officially encourages the use of ergogenic drugs in its athletic programs. The British are a great deal more prudish and hard-nosed than most. They state that the taking of any chemical substance not normally present in the body and not playing an essential role in a healthy person competing in athletics falls in the category of "doping."

For a more practical approach and definition of substance misuse, one should refer to the ruling of the International Amateur Athletic Federation (track and field) which states that no agent that stimulates muscles and nerves, which paralyzes the sense of fatigue, or which is habit forming, should be used.

Any definition of what such agents specifically will or will not do can create many unanswerable questions. Certainly, no coach wants to harm any of his charges, but each would like to possess the magic key to assure optimum performance of his squad at all contests.

What Can a Coach Do?

As most coaches are aware, they are a force of great influence. They also have a great responsibility.

If you notice a young person manifesting definite changes and a secretiveness that makes you suspect problems in the drug area, it is best to approach him directly as a concerned person. You should be more interested in him as a person and less interested in the particular drug or chemical he may be abusing. It is difficult, but important to confront him directly as to your concern and ask him to talk about the problems he is having. It is probably better to go to the person involved first and tell him before you go to his parents or to authorities. This latter may be the only avenue to follow, but the person should be told what you plan to do.

On the importance of counseling, Kenneth S. Clarke, Ph.D., formerly of the American Academy of Orthopaedic Surgeons, and now a professor at Mankato State, expressed some thoughts nearly two years ago which are valid today.

The coach, said Dr. Clarke, "must take his counselor role seriously and not give tacit approval to dabbling (in drugs) by turning his back on the problem. Research has demonstrated that the attitude of the coach concerning health and safety matters is a strong influence on the attitudes of his athletes—and he should use it. The saying goes, 'If you're not part of the solution, you're part of the problem.'

"What remains is to tell it the way it really is to athletes—that drug dabbling is far more apt to erode than enhance their normal capabilities in sports—and then put one's efforts doggedly into the ethics and competence of their leadership, medical and non-medical, for the enforcement. Drug dabbling should be approached frankly, honestly, relying on the personal discipline that is asked for in coach's counseling on tobacco, alcohol, sportsmanship, and other such practices during the young athlete's formative years."

Recognition of the Drug User

The problem of recognition of the drug user or abuser can be complicated. The person who begins to show personality changes or who withdraws from his usual activities may be suspect. It has been shown that drug abusers frequently will miss classes, especially physical activity classes. They will begin to do work in the classroom that is below their previous performance levels. Many of the young people lose their long term goals and seem to show less ambition. More specific examples:

1. Inability to coordinate, standing or walking.
2. Muddled speech.
3. Impaired judgment (barbiturate user).
4. Rapid pulse.
5. Restlessness.
6. Jittery.
7. Muscular twitches.
8. Heavy sweating and bad breath (hallmarks of amphetamine abuse).
9. Nervous, highly talkative and over-active (amphetamine).
10. Marijuana abuse:
    —red eyes are fairly common symptom
    —may begin to miss gym class and then other classes
    —increased appetite with special craving for sweets
    —regular user is apathetic, listless and careless about his personal habits
    —may lead to lack of motivation and loss of long term goals.
11. Pinpoint pupils—could be heroin or another narcotic abuse.
12. Chills.
13. Needlemarks on arms and legs. Addicts often wear long-sleeved sweaters, even in summer, to both keep warm and hide scars.
14. A person's language (his jargon) may indicate he uses drugs.

Two Drug Families Athletes Abuse

Amphetamines

(am - fet′ - ah - min)—Used to stimulate the central nervous system, increase blood pressure, reduce appetite, and reduce nasal congestion (*Dorland's Illustrated Medical Dictionary*).

Other Names: Pep pills, bennies, wake-ups, eye-openers, lid poppers, co-pilots, truck drivers, peaches, roses, hearts, cartwheels, whites, coast to coast, LA turnabouts, browns, footballs, greenies, bombido, oranges, dexies, jelly-beans, A's, Jellie babies, sweets, beans, uppers.

Amphetamines are the "paradoxical" drugs. Athletes have taken them for years to supposedly run faster, pump harder or jump higher, but in reality they may have a reverse effect. When an athlete takes an amphetamine he may think his performance is superb, but in reality he probably is doing worse. From a scientific point of view, the researchers are in conflict. There are some reports which claim that in solo type activities, amphetamines may be able to slightly increase performance. However, many studies show that in football, basketball or baseball and other complex problem-solving sports, the users do worse.

Amphetamines are chemical substances that primarily affect the central nervous system. They are used to attempt to speed up nerve-muscle reaction.

The amphetamines act to lessen a person's ability to recognize possible dangerous fatigue sensations, constrict blood vessels, and suppress appetite by stimulating the central nervous system. They can be highly dangerous.

Depending on dosage, individual sensitivity and certain other factors, amphetamines:

- Can mask or hide the protective signs of dangerous fatigue.
- Delay pulse and respiration recovery time after exertion.
- Can be highly toxic.
- Have been known to cause physical dependency if taken regularly over varying periods of time, depending on the individual user. (Physical dependency occurs when a user suffers withdrawal symptoms.)
- May lead to varying degrees of psychological dependency by the user after continuous and prolonged administration. This in turn may lead to aggressive and anti-social behavior. If a user stops taking them, he may become very depressed and have difficulty performing routine tasks. Large doses may produce profound behavioral effects, such as psychosis.
- Produce states of nervousness, acute anxiety and insomnia as the dosage is increased.

Anabolic-Androgenic Steroids

(an″ ah-bol′ ik)—pertaining to, characteristic of, promoting anabolism, or constructive metabolism.

(an″ dro-jen′ ik)—producing masculine characteristics.

(ste′ roid)—A group name for compounds which resemble cholesterol chemically. Some of the substances included in the group are the sex hormones, cardiac aglycones, bile acids, sterols proper, toad poisons, saponins, and some of the carcinogenic hydrocarbons. *(Dorland's Illustrated Medical Dictionary).*

The anabolic-androgenic steroids (synthetic male sex hormones) which resemble chemically and functionally the male sex hormones, are taken by athletes with the intent of gaining weight and strength. Many athletes think that increased body weight results in increased muscular strength. At least one study has proven to the contrary.

Perhaps the best existing document on the subject was published in 1966 in the Journal of Applied Physiology by Dr. William M. Fowler Jr., then of the UCLA Medical School and now at University of California, Davis.

In a double blind (neither the subject nor the researcher knows who is taking the active tablet) controlled study, eight took the placebo (sugar pill), nine took the anabolic-androgenic steroid, ten took the placebo and exercised, while ten more took the drug and exercised.

Summarized, Fowler found that the drug did increase weight, but that much of it was probably due to fluid retention and did not necessarily result in an increase in strength. The increase in strength was in direct correlation to the amount of hard work and exercise, whether taken by a drug user or a non user.

The tests were conducted by giving normal dosages. Some athletes take much greater dosages. In those quantities (and even in normal quantities) it has been shown that the drug can be dangerous for many people. It is nearly impossible to do research in amounts over the recommended dosages. The problem of liability then becomes very real.

Anabolic-androgenic steroids have been known to cause:

- Premature closure of the growing plates in the long bones in younger athletes. The younger the athlete when taking the drug, the greater the probability his growth actually will be stunted.
- Liver Damage (chemical hepatitis).
- Prostatic hypertrophy (enlarged prostate gland).
- Testicular atrophy (testicles shrink in size).
- Aggravation and stimulation of the growth of any pre-existing cancers or hormone sensitive tumors.

Why Drugs?

A New Theory on Drug Action

Dr. Hardin Jones, a research physiologist at California, Berkeley, has spent the last six years primarly in drug research, and has developed some interesting new theories. He has concluded that almost all of the drugs taken recreationally and experimentally by human beings have their primary action in the various pleasure and sensual centers of the brain. Man is basically a pleasure-seeking animal and to one degree or another will pursue things that give him pleasure. Most people use various drugs and chemicals because they like the effect on their central nervous system. They take them, at least initially, because it feels good and they enjoy the feeling.

One of the problems is that most of the chemicals or drugs also have secondary toxic or damaging effects and these can create permanent damage. This is best illustrated by what the heroin addict describes as the "main line," or giving himself the drug directly into his vein. It is usually described as a sexual pleasure sensation and unfortunately, after repeated usage, the drug can damage the pleasure centers so that they no longer can get normal pleasure registered in these damaged areas.

Dr. Thaddeus Mann in Cambridge, England, has also discovered similar effects. He suggests that if Romeo had had hashish, he would have had no need for Juliet. This explains to some extent why we have such a poor recovery rate from drug addiction, the person has damaged his pleasure center cells enough that the only way he can get any pleasure is to return to drug usage even after he has gone through withdrawal and is no longer using any drugs. This helps explain why drugs can be a one-way trip to entrapment.

A Summary of Drug Facts

Normal is Best

A notion in this country, and all over the world, is that there are "super" drugs, or miracle drugs that can do things for people that they can't do for themselves. One thing should be made clear: there is no drug that can safely make anybody better than normal. If one has a normally functioning liver, adrenal gland, brain, nerve-muscle complex, or heart, there is no drug that can make them better. The only time to use drugs or any kind of chemical substance is when a diseased, injured, or deficiency state exists.

By the time they are 20, today's children will have watched approximately 15,000 hours of television. During this time they will have seen numerous commercials telling them that drugs can calm their stomach, quiet their nerves, clear their complexion, improve their performance on the job, and relieve their aches and pains. They grow up thinking *drugs are the answer.* Society has created this culture, in a sense, and the medical profession has had a part in it. Drug manufacturers and salesmen must also share the responsibility for furthering the illusion that drugs are the best solution to people's problems.

Drugs do have a very necessary application. Prior to the use of insulin, a diabetic had a very short lifespan. With insulin, he nearly has a normal life expectancy. Still, the diabetic is not as good as the normal individual whose functioning pancreas manufactures it own insulin. A healthy, normal body is best.

Body Pollution

There is an aggressive, active ecology movement in this country—regarding the pollution of rivers, streams and air, but not enough people worry about perhaps the greatest ecology problem of them all—the pollution of the body. In a sense, this is what happens when any type of a non-necessary chemical substance is taken. In the diseased, injured or deficiency states, drugs can be beneficial. Otherwise, they are pollutants.

The body is an incomparable, beautiful piece of machinery with its own industrial plants and waste removal facilities. Children need to be taught at an early age to have respect for their physiological systems. Older people, of necessity, must show respect for their bodies.

Power of the Mind

Much can be done by learning to better use our minds and powers of cerebration. The power of the human mind to affect the well being of the body is amazing, but unfortunately the potential of this power has not been fully developed. It is intriguing that Yogas can sit and contemplate their navels, slowing their pulse rates to 30 beats per minute through sheer concentration. There is a great deal to learn in this area of mind over matter.

It is not out of reason to expect that some day the school systems will offer courses teaching children how to "turn on" with their minds. It certainly will be a lot safer than dumping harmful chemicals into their bodies to "turn on."

Please keep in mind that the idea that something miraculous in terms of living will come from drug usage is false. Drugs create illusions but such illusions or fantasies never solve any of life's problems and, in fact, damage the long-term health of the body. A real feeling of worth and a person's true image of himself comes only when he accepts, and works within reality.

Ergogenic Aids

There are four general categories of ergogenic aids—aids used by athletes to supposedly increase their performance.

Physical and Mechanical—One of the most common aids used to supposedly increase work potential is oxygen. If one inhales oxygen prior to an event, it has been fairly well shown that it has no effect on work performance, speed, running ability, or rate of recovery. If, however, oxygen can be given during the exercise period itself, workloads can be maintained for longer periods of time. Here is one of the still to be defined areas.

For instance, during a football or basketball game, is it wrong to have oxygen available at the sidelines? At a higher altitude many coaches will insist on it. But the best scientific evidence says it is of little real value, because the oxygen cannot be stored and can last no longer than two or three minutes unless the person can breathe it all the time. There, of course, may be some psychological help. The power of suggestion is great.

There are other physical ergogenic aids. The use of "negative ionization" and ultra-violet rays have been investigated and no evidence of increased ability or strength were shown, but some researchers felt the sense of well-being might be increased — suggested psychological assistance.

Massage could be considered a mechanical form of ergogenic aid and it has been shown to speed recovery from fatigue slightly, but no evidence of increased strength or performance can be demonstrated.

Exercise rituals would have to be considered mechanical ergogenic aids. Isometrics, isotonics, weight lifting and exercise stations all increase strength and possible work capacity in a direct relationship to the amount of hard, demanding and persistent work done. A good conditioning and varied training program is the best and safest ergogenic aid known to date.

Nutritional Ergogenic Aids—Probably no area of ergogenic aids has gotten more attention than this one. When Herb Elliott, the Australian distance star, was eating oats and seaweed, many aspiring track stars were trying to consume the same crop. But Herb Elliott also worked hard, ran a lot, and ate a lot of normal, wholesome, well-balanced food.

Protein and amino acid supplements have been mentioned for years, but most scientific evidence shows that a well-balanced diet will supply all of the protein and essential amino acids necessary for any athlete. In fact, the major work in this area showed that a high protein diet requires as much as five per cent more oxygen for its metabolism; therefore, a persistent diet of this type was detrimental. This factor, along with the problem of digestion, should prompt examination of the contents of the pre-contest diet.

All the scientific evidence seems to show that the excess use of vitamins is over-rated. Americans put out the most expensive urine in the world. It is bright yellow, loaded with excreted vitamins. A well-balanced diet of fresh, well-prepared food will supply all the vitamins really necessary. At the same time, one should accept the fact that many of these nutritional substances may work psychologically, and, if not overdone, can cause no harm.

The basic needed elements, besides a well-balanced diet, are water, potassium and sodium chloride (salt). They are needed in hot weather for increased energy output, comfort, and even as protection for life itself. Yet some coaches still pride themselves on the spartan practice of allowing no water or electrolyte solutions during practices, no matter what the weather conditions.

Wheat germ has recurrently been used in many ways by athletes. No harm probably has ever been done by a moderate amount of wheat germ, so there is no reason not to use it (probably for psychological reasons). There certainly is little scientific evidence that would lend any support to its value. There are fairly large amounts of Vitamin E in wheat germ, which shows that it may be helpful to the oxygen utilization by the individual cells of the body, but scientific evidence on this point is far from conclusive. Time will tell on the importance of Vitamin E.

Numerous other nutritional and mineral substances have been used and will be mentioned only to state that they are readily supplied by a normal, adequate diet and need not be supplemented. They include calcium, magnesium, phosphorus, lecithin, phosphates, sodium citrate and bicarbonate, aspartic acid, coffee, tea, coke and gelatin. Most all of these above-mentioned have very little or no relationship to increased muscular performance in a well-conditioned, normally fed, and properly hydrated athlete.

Psychological Ergogenic Aids—In this area the most noteworthy example would probably be hypnosis. It has been tried on numerous occasions in almost every sport. Hypnosis is the ultimate in suggestability and to a greater or lesser degree every coach tries to put inspirational or positive suggestions into an athlete's head. (There is no parparticular harm when hypnosis is done by a trained person who is not unrealistic in his request of the subject when hypnotized, but it has highly questionable value in sports).

Actually, many of the previously mentioned substances probably have their greatest effect because of psychological overtones. The human being is highly subject to suggestion and can be easily influenced—positively or negatively—by those around him, whether it be the coach, the trainer or the team physician.

Pharmacological Ergogenic Aids (Drugs)—This category has to do with the most dangerous and potentially harmful ergogenic aids. The two main families abused in this category, the amphetamines and anabolic-androgenic steroids, have been discussed previously.

There have been many other drugs and central nervous stimulants and depressants, heart stimulants, muscle stimulants, and respiratory stimulants, used or tried in athletics. A partial list would include caffeine, camphor, cocaine, tranquilizers, coramone, strychnine, metrazol, digitalis, ronical, epinephrine, nitrites, cytochrome C, thiocyanate, veratrum alkaloids, rauwolfia, hydralazine, thyroid extract, adrenal cortical drugs and insulin.

This has been an attempt to cover a vast area in a limited space. It appears clear that an intelligent and sound coach, an interested and sincere trainer, a conscientious and concerned team physician, all communicating well with each other, can be a real "ergogenic aid" to any athlete or group of athletes. The athletes know who is sincere and who is not. They also should know that hard work, sweat, tears and sacrifice are necessary to produce the winning results they want. A good training and conditioning program is still the safest and best ergogenic aid.

What Others are Saying

by Jim Bainbridge, *San Francisco Examiner*
San Francisco, Calif.—There is a growing tendency toward a strong law and order policy on drug use in college athletics. It is a problem that has grown rapidly as a reflection of a large change within the culture.

It is a problem that, up to now, has gone nearly unchecked.

"If we are to be effective," California team physician Dr. G. Jerome Patmont said, "in enforcing controls on drug use we must have a source of strength, someone who can enforce policy."

by Joe Moackler, *Des Moines Register and Tribune*
Des Moines, Ia.—Several years ago, a major university football team from the midwest played a game in high altitude country and won—perhaps because of capsules filled with brown sugar.

The coach of the team had worried about the effect the thin air would have on his players. The trainer decided what was needed was a "psychological lift."

The coach didn't know about those capsules until after the victory and none of the players knew what the capsules had contained.

"I'd sidle up to them, stick out my hand and whisper, 'Take this, it'll give you a lift out there'," the trainer disclosed.

"It worked. Some of them came back to me and wanted another, saying the effects of the first one had worn off.

"The only trouble was that I had a heck of a time on the plane coming home trying to convince some of them that there wasn't anything in those capsules but brown sugar—I'd loaded them myself."

Even a seemingly harmless incident such as that worries leaders of the National Collegiate Athletic Association (NCAA), who are waging a concentrated battle against drug abuse by athletes.

"The fact that they would take those capsules without knowing what's in them scares me," said Tom Hansen, an assistant director and public relations chief of the NCAA . . . .

What Others are Saying

by Dwight Chapin, *Los Angeles Times*

Los Angeles, Calif.—Joe Antunovich has worked hard—very hard.

He is probably about two years away from his peak as a discus thrower, but it's very probable that in another year, after the Olympic Games, he will put his discus on the shelf.

He does not hesitate to tell you why.

"You invest a lot," he says. "You make a commitment to reach your potential and try to become the best in the world. You train awfully hard for six or eight years and then you can't get anywhere near the best because of what others are doing. At that point, you either jump on the bandwagon . . . or you quit."

The latter option appears to be the better one to Antunovich, a man who refuses to compromise his principles in many ways.

The bandwagon he is talking about is fueled by drugs, a subject he discussed candidly.

"Steroids and amphetimines are reasons I don't want to continue in track and field," Antunovich says. "Their use is going to multiply. I shudder to think what is going to be happening in 10 years.

"A lot of Eastern European countries are giving these drugs to their trackmen under the supervision of medical personnel, but it can't be proven. As far as I know, it's almost impossible to detect the use of anabolic-androgenic steroids."

Antunovich, 23, of USC is a big man and a skilled man—the Pacific 8 champion in the discus.

He doesn't take drugs but he says:

"Nobody would know it. In fact, I know a lot of people—including people in track and field—look at a man my size and say. 'A guy that big MUST be taking something.' "

by C. C. Johnson Spink, Editor and Publisher, *Sporting News*

St. Louis, Mo.—The board of directors of the National Trainers Association will come out soon with a strong stand against the use of nontherapeutic drugs in sports. Hopefully, this will be a major step in breaking the chain of dope abuse by some of our athletes.

What Others are Saying

Houston Post

Houston, Texas—The NCAA and the American Football Coaches Association were urged Tuesday to assume a leadership role in fighting the spiraling use of drugs on college campuses.

A panel of experts told both their respective conventions that drugs merely bypass the senses and have damaging effects and that good training and condition routines are the safest and best programs for better athletic performance.

by Joe Hendrickson, *Pasadena Star News*

Houston, Texas—The danger in the growing use of drugs on college campuses was a matter for discussion in an interesting round table discussion Tuesday morning prior to the NCAA awards luncheon. Admiral Tom Hamilton, the retiring Pac-Eight commissioner, in one of his last acts as an NCAA member, keynoted the drug discussion by pleading to those in charge of sports programs to take the lead in influencing youth to reverse the growing use of drugs.

New York Times-Washington Post News Service

Dallas, Texas—The article in a national magazine put it in plain words: "Drugs can kill sports."

Dr. Martin Blazina, the UCLA athletic team physician, says that use of drugs has spread to athletes as young as 14 or 15 years old.

There is no indication to what percentage of athletes might be doping themselves. But people in key educational and medical positions are worried.

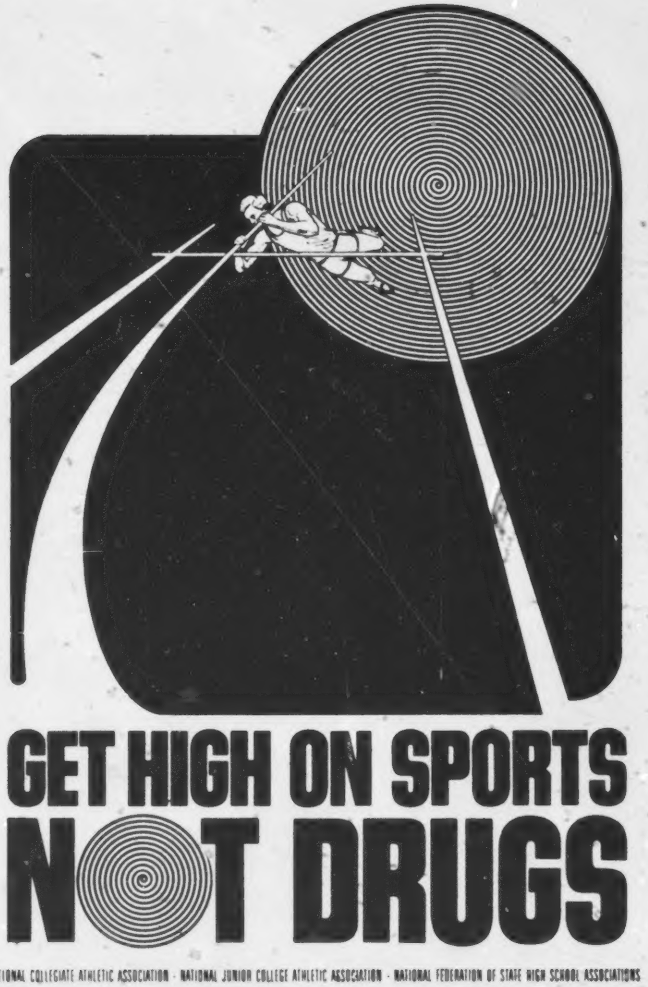
Says Dr. Blazina:

"To me, the high school athlete is our area of greatest concern. Drugs can have a profound effect on a growing person. Growth can be restricted."

Milwaukee Journal

Chicago, Ill. (AP)—Drugs are no substitute for "good conditioning, excellent coaching and proper mental attitude" in athletics, says the team physician for Ohio State University.

It is morally wrong and illegal to dope race horses but no rules exist in American sports, Dr. Robert J. Murphy of Columbus told the American Medical Association convention Wednesday.


GET HIGH ON SPORTS
NOT DRUGS
NATIONAL COLLEGIATE ATHLETIC ASSOCIATION · NATIONAL JUNIOR COLLEGE ATHLETIC ASSOCIATION · NATIONAL FEDERATION OF STATE HIGH SCHOOL ASSOCIATIONS

For additional copies of this and other anti-drug posters, write the National Collegiate Athletic Association.

Additional copies of this booklet may be obtained from the National Collegiate Athletic Association, 1221 Baltimore, Kansas City, Missouri 64105. Price 25¢ per copy.

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NCAA Resolution on Drug Misuse and Abuse

A resolution which condemns the use of non-therapeutic drugs by any of its member institutions was passed unanimously by the delegates to the NCAA's 65th Convention in Houston in January 1971. The resolution:

WHEREAS, non-therapeutic drug usage described as doping is reported to be on the increase in the general college and youth populations; and

WHEREAS, the NCAA always has been opposed to non-therapeutic drug usage by student-athletes;

NOW, THEREFORE, BE IT RESOLVED, that the NCAA affirms its unequivocal condemnation of the employment of non-therapeutic drugs in any of its member institutions or affiliated organizations by staff members who authorize or allow their student-athletes to use such drugs and by student-athletes who do use such drugs;

BE IT FURTHER RESOLVED that all member institutions, their athletic staffs and their student-athletes agressively assert their wholesome influences in combating usage of non-therapeutic drugs among the nation's youth;

BE IT FURTHER RESOLVED, that staff members or student-athletes who use drugs in a non-therapeutic manner in any athletic program are in violation of the principles of ethical conduct of the NCAA.

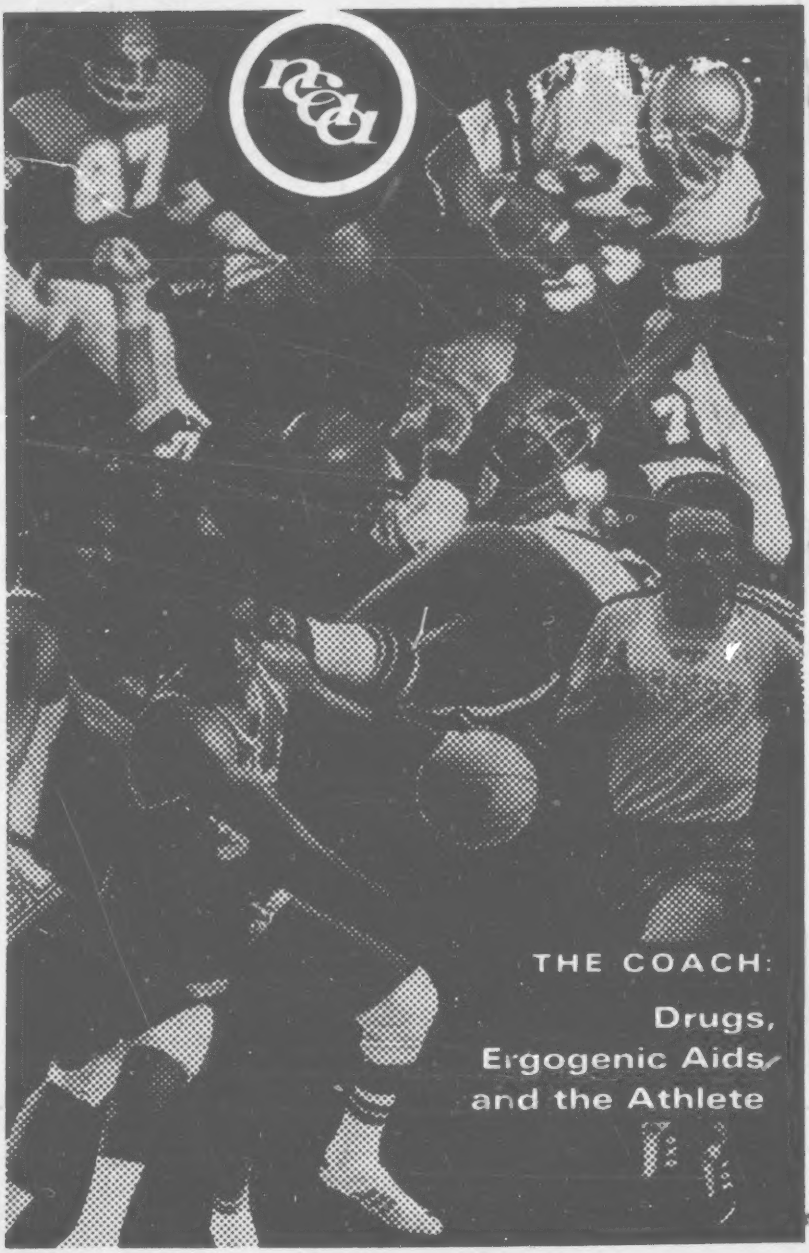
Adopted at NCAA Convention in January, 1971

NCAA Drug Education Committee

The Drug Education Committee of the National Collegiate Athletic Association has produced this pamphlet to bring to coaches and athletes the latest and best information available on the problem of drugs and ergogenic aids in sports and in our society. Special assistance was given by the Preventive Programs Division of the Bureau of Narcotics and Dangerous Drugs.

A four-man committee has launched an active in-depth drug education program for the NCAA. Chairman of the group is Robert W. Pritchard, director of athletics at Worcester Polytechnic Institute, Worcester, Massachusetts, who launched the NCAA Drug Education program in 1969. Other members of the Committee are Dr. Donald L. Cooper, former Olympic team physician and currently team physician at Oklahoma State University; Admiral Thomas Hamilton, USN, Ret., who recently retired as Executive Director of the Pacific-8 Conference; and James H. Wilkinson of the NCAA Executive Office staff.

[Exhibit D]



THE COACH:

Drugs,
Ergogenic Aids,
and the Athlete

GET HIGH ON SPORTS
NOT DRUGS

For additional copies of
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Why a Drug Pamphlet for Coaches?

Dear Coach:

As a coach, you should arm yourself with as much information on the drug problem as possible. We want you to be able to "rap" with youth. Understanding is the basis of all solutions. To recognize the symptoms and evidence of drug usage, one must know the tell-tale signs of experimentation and realize someone is in trouble.

Further, how do you handle these problems? To whom do you talk? In whom should you confide? How do you react—do you kick the boy off the squad, or is that the worst thing you can do? We think this pamphlet will be helpful to you.

Robert W. Pritchard
Chairman, NCAA Drug Education Committee
Worcester Polytechnic Institute

Other Committee members:
Donald L. Cooper, M.D.
Oklahoma State University
Hardin Jones, Ph.D.
University of California, Berkeley
Alan Hart, Trainer
Ohio State University
James H. Wilkinson, *NCAA*

Gentlemen:

Millions of Americans, young and old, who participate in sports of all kinds have been justly proud of their sportsmanship.

Today, a problem has arisen in a minority of athletes. The "win at any cost" attitude has caused them to turn to the use of drugs in an attempt to increase performance. This has sometimes resulted in injury to athletes. However, even if no apparent physical harm results, the damage to the athlete, ethically and psychologically, can be severe. And the damage to the American concept of sportsmanship may be irreparable if such misuse of drugs continues and increases.

Coaches, whether they work with high school or college youth, professional athletes or little league youngsters, are educators and builders of character. It is not enough to say, "I never permit my boys to use drugs." I urge you to take the next step: To personally commit yourself to educating youth in the proper use of drugs, and to seek help for the few on your team who may need it.

The available evidence indicates that there is no real advantage for the athlete who tries to increase ability through drugs. The medical profession, coaches and trainers throughout the world consider it unsound and unethical to utilize drugs to try to enhance athletic capability. I ask you to make that extra effort to see that our youth escape the trap which drugs present to them. They, and our country, need your help.

John Ingersoll, Director
Bureau of Narcotics and Dangerous Drugs.

Drugs and Athletics

Randy Matson, perhaps the greatest weight thrower in the history of track and field and currently the world record-holder in the shot put, said he tried anabolic-androgenic steroids in 1964 and 1965.

This type of steroid has been used by athletes to supposedly make them grow stronger and gain weight at a faster rate.

"But I didn't see any outstanding results when I took the drugs," Matson said. "I didn't gain any weight; I didn't throw farther with them, as far as I could tell, so I stopped using them."

He then set the world record in the shot put of 71'5½" in 1967.

"Of all the people taking them, the world record holder in the shot put doesn't use them," commented Dr. Donald L. Cooper, a former Olympic team physician and team physician at Oklahoma State University. "A lot of weight men are getting bigger, but this doesn't mean they're getting quicker and stronger. If they are, then why aren't they catching Matson?"

Seeking to improve their athletic performance, athletes have experimented with an endless variety of drugs. Based on scientific evidence, however, it is difficult to find anyone who has been safely improved.

The taking of pharmacological aids has proved to be a hazardous venture for some—leading to permanent injury and death. Yet to be known are the long-range effects that drugs might cause.

There are still many unanswered questions in the area of the athlete and drugs. A lot of the conflicting beliefs are not based on scientific evidence but on personal belief. It is the hope of all those concerned with this problem that some basic facts may be established and that the fundamental principles of human physiology will be understood. The final answers are not yet available, but to a great extent what coaches and athletes do in the next few years can set the pattern for the expanding and continued growth of excellent athletic programs.

Some Basic Concepts

"Hope always springs eternally that someone will find something that will make the weak stronger, the slow faster and the dull brighter. There's one overriding fact that I think should be continually reemphasized: To our knowledge, a normal, well-fed human being can never be safely improved upon by any drug."

Dr. Donald L. Cooper
Olympic Team Physician—Mexico City, 1968
Team Physician, Oklahoma State University

The entire area of ergogenic aids and drugs always has fascinated people. Human beings are notoriously on the prowl for a "gimmick" or "an easy way" or that "special something extra." There are generally no shortcuts to an excellent performance, but apparently it is man's nature to keep striving for help—"a fair advantage."

The imagination can be challenged by the definition of the word "ergogenic." It is short, yet unlimited. According to *Dorland's Illustrated Medical Dictionary*, it is defined simply as "anything tending to increase work output."

Within the broad limits of this definition there are many shady areas in the consideration of ergogenic aids and drugs. The more they are explored, the more complicated and conflicting are the reports.

History of Drugs in Athletics

In sports, the first recorded death from drug usage was in the late 1890's, when a British cyclist died from using ephedrine. This kind of tragic occurrence has been repeated with numerous drugs on several occasions since. One consistency has been demonstrated throughout: more losers use drugs than winners. The drug users know they have not made the proper effort in training and are far more prone to look for the "gimmick" or artificial help that isn't there.

No country officially encourages the use of ergogenic drugs in its athletic programs. The British are a great deal more prudish and hard-nosed than most. They state that the taking of any chemical substance not normally present in the body and not playing an essential role in a healthy person competing in athletics falls in the category of "doping."

For a more practical approach and definition of substance misuse, one should refer to the ruling of the International Amateur Athletic Federation (track and field) which states that no agent that stimulates muscles and nerves, which paralyzes the sense of fatigue, or which is habit forming, should be used.

Any definition of what such agents specifically will or will not do can create many unanswerable questions. Certainly, no coach wants to harm any of his athletes, but each would like to possess the magic key to assure optimum performance by his squad.

What Can a Coach Do?

As most coaches are aware, they are a force of great influence. They also have a great responsibility.

If you notice a young person manifesting definite changes and secretiveness that makes you suspect problems in the drug area, it is best to approach him directly as a concerned person. You should be more interested in him as a person and less interested in the particular drug or chemical he may be abusing. It is difficult but important to confront him directly as to your concern and ask him to talk about his problems. It is probably better to go to the person involved first and tell him before you go to his parents or to the authorities. This latter may be the only avenue to follow, but the person should be told what you plan to do.

On the importance of counseling, Kenneth S. Clarke, Ph.D., formerly of the American Academy of Orthopaedic Surgeons, and now a professor at Mankato State, expressed some thoughts nearly two years ago which are valid today.

The coach, said Dr. Clarke, "must take his counselor role seriously and not give tacit approval to dabbling (in drugs) by turning his back on the problem. Research has demonstrated that the attitude of the coach concerning health and safety matters is a strong influence on the attitudes of his athletes—and he should use it. The saying goes, 'If you're not part of the solution, you're part of the problem.'

"What remains is to tell it the way it really is to athletes—that drug dabbling is far more apt to erode than enhance their normal capabilities in sports—and then put one's efforts doggedly into the ethics and competence of their leadership, medical and non-medical, for the enforcement. Drug dabbling should be approached frankly, honestly, relying on the personal discipline that is asked for in coach's counseling on tobacco, alcohol, sportsmanship and other such practices during the young athlete's formative years."

Recognition of the Drug User

The problem of recognition of the drug user or abuser can be complicated. The person who begins to show personality changes or who withdraws from his usual activities may be suspect. It has been shown that drug abusers frequently will miss classes, especially physical activity classes. They will begin to do work in the classroom that is below their previous performance levels. Many of the young people lose their long-term goals and seem to show less ambition. More specific examples:

1. Inability to coordinate, standing or walking.
2. Muddled speech.
3. Impaired judgment (barbiturate user).
4. Rapid pulse.
5. Restlessness.
6. Jittery.
7. Muscular twitches.
8. Heavy sweating and bad breath (hallmarks of amphetamine abuse).
9. Nervous, highly talkative, over-active, possibly hostile, aggressive and paranoid behavior (amphetamine).
10. Marijuana abuse:
    Acute effects—
    ... red eyes are fairly common symptoms
    ... may begin to miss gym class and then other classes
    ... increased appetite with special craving for sweets
    Persisting effects—
    ... clumsiness
    ... lowered attention span
    ... regular user is apathetic, listless and careless about his personal habits
    ... may lead to lack of motivation and loss of long-term goals
    ... may have recognizable odor on their person
11. Pinpoint pupils—could be heroin or another narcotic abuse.
12. Chills.
13. Needlemarks on arms and legs. Addicts often wear long-sleeved sweaters, even in summer, to both keep warm and hide scars.
14. A person's language (his jargon) may indicate he uses drugs.
15. Episodes of stupor and incoherent speech may indicate possible acute LSD intoxication.

Two Drug Families Athletes Abuse

Amphetamines

(Am - fet' - ah - min)—used to stimulate the central nervous system, increase blood pressure, reduce appetite, and reduce nasal congestion *(Dorland's Illustrated Medical Dictionary).*

Other Names: Pep pills, bennies, wake-ups, eye-openers, lid poppers, co-pilots, truck drivers, peaches, roses, hearts, cartwheels, whites, coast to coast, LA turnabouts, browns, footballs, greenies, bombido, oranges, dexies, jelly-beans, A's, jellie babies, sweets, beans, uppers, ephedrine, crystal.

Amphetamines are the "paradoxical" drugs. Athletes have taken them for years to supposedly run faster, pump harder or jump higher, but in reality they may have a reverse effect. When an athlete takes an amphetamine he may think his performance is superb but in reality he probably is doing worse. From a scientific point of view, some studies are in conflict. There are some poorly controlled studies which claim that in solo type activities, amphetamines may be able to increase performance very slightly. However, well-controlled studies show that the athlete will do no better and in many cases does worse. In the limited number of tests that have been done on large groups of athletes, it was in the losers that amphetamines were found.

Amphetamines are chemical substances that primarily affect the central nervous system. They are used to attempt to speed up nerve-muscle reaction.

The amphetamines lessen a person's ability to recognize possible dangerous fatigue sensations, constrict blood vessels, and suppress appetite by stimulating the central nervous system. They can be highly dangerous. They can also cause dangerous heat buildup in the body by the non-recognition of fatigue.

Depending on dosage, individual sensitivity and certain other factors, amphetamines:

- Can mask or hide the protective signs of dangerous fatigue.
- Delay pulse and respiration recovery time after exertion.
- Can be highly toxic.
- Have been known to cause physical dependency if taken regularly over varying periods of time, depending on the individual user. (Physical dependency occurs when a user suffers withdrawal symptoms.)
- May lead to varying degrees of psychological dependency by the user after continuous and prolonged administration. This in turn may lead to aggressive and anti-social behavior. If a user stops taking them, he may become very depressed and have difficulty performing routine tasks. Large doses may produce profound behavioral effects, such as psychosis.
- Produce states of nervousness, acute anxiety and insomnia as the dosage is increased.
- May be associated with aggressive, hostile, paranoid behavior on the part of the user.

Anabolic-Androgenic Steroids

(an'' ah-bol' ik)—pertaining to, characteristic of, promoting anabolism, or constructive metabolism.

(an'' dro-jen' ik)—producing masculine characteristics.

(ste' roid)—A group name of compounds which resemble cholesterol chemically. Some of the substances included in the group are the sex hormones, cardiac aglycones, bile acids, sterols proper, toad poisons, saponins, and some of the carcinogenic hydrocarbons. *(Dorland's Illustrated Medical Dictionary.)*

The anabolic-androgenic steroids (synthetic male sex hormones) which resemble chemically and functionally the male sex hormones, are taken by athletes with the intent of gaining weight and strength. Many athletes think that increased body weight results in increased muscular strength.

Perhaps the best existing document on the subject was published in 1966 in the Journal of Applied Physiology by Dr. William M. Fowler, Jr., then of the UCLA Medical School and now at the University of California, Davis.

In a double blind (neither the subject nor the researcher knew who was taking the active tablet) controlled study, eight took the placebo (sugar pill), nine took the anabolic-androgenic steroid, ten took the placebo and exercised, while ten took the drug and exercised.

Summarized, Fowler found that the drug did increase weight, but that much of it was due to fluid retention and did not necessarily result in an increase in strength. The increase in strength was in direct correlation to the amount of hard work and exercise, whether taken by a drug user or a non-user. The only way to make a muscle fiber get larger and stronger is to overload and fatigue it.

The tests were conducted by giving normal dosages. Some athletes take much greater dosages. In those quantities (and even in normal quantities) it has been shown that the drug can be dangerous for many people. It is nearly impossible to do research in amounts greater than the recommended dosages. The problem of liability then becomes very real. Anabolic-androgenic steroids have been known to cause:

- Premature closure of the growing plates in the long bones in younger athletes. The younger the athlete when taking the drug, the greater the probability his growth actually will be stunted.
- Liver damage (chemical hepatitis).
- Prostatic hypertrophy (enlarged prostate gland).
- Testicular atrophy (testicles shrink in size).
- Aggravation and stimulation of the growth of any pre-existing cancers or hormone sensitive tumors.

Why Drugs?

A New Theory on Drug Action

Dr. Hardin Jones, a research physiologist at the University of California, Berkeley, has spent the last seven years primarily in drug research and has developed some interesting new theories. He has concluded that almost all of the drugs taken recreationally and experimentally by human beings have their primary action in the various pleasure and sensual centers of the brain. Man is basically a pleasure-seeking animal and to one degree or another will pursue things that give him pleasure. Most people use various drugs and chemicals because they like the effect on their central nervous system. They take them, at least initially, because they make them feel good and they enjoy the feeling.

One of the problems is that most of the chemicals or drugs also have secondary toxic or damaging effects which create permanent damage. This is best illustrated by what the heroin addict describes as the "main line," or giving himself the drug directly into his vein. It is usually described as a sexual pleasure sensation and unfortunately, after repeated usage, the drug can damage the pleasure centers so that they no longer can get normal pleasure registered in these damaged areas.

Dr. Thaddeus Mann in Cambridge, England, has also discovered similar effects. He suggests that if Romeo had had hashish, he would have had no need for Juliet! This explains to some extent why we have such a poor recovery rate from drug addiction. The person has damaged his pleasure center cells enough that the only way he can get any pleasure is to return to drug usage even after he has gone through withdrawal and is no longer using any drugs. This helps explain why drugs can be a one-way trip to entrapment.

A Summary of Drug Facts

Normal is Best

A notion in this country, and all over the world, is that there are "super" drugs, or miracle drugs that can do things for people that they can't do for themselves. One thing should be made clear: There is no drug that can safely make anybody better than normal. If one has a normally functioning liver, adrenal gland, brain, nerve-muscle complex or heart, there is no drug that can make them better. The only time to use drugs or any kind of chemical substance is when a diseased, injured or deficiency state exists.

By the time they are 20, today's children will have watched approximately 15,000 hours of television. During this time they will have seen numerous commercials telling them that drugs can calm their stomach, quiet their nerves, clear their complexion, improve their performance and relieve their aches and pains. They grow up thinking *drugs are the answer*. Society has created this culture, in a sense, and the medical profession has had a part in it. Drug manufacturers and salesmen must also share the responsibility for furthering the illusion that drugs are the best solution to people's problems.

Drugs do have a very necessary application. Prior to the use of insulin, a diabetic had a very short lifespan. With insulin, he has a near-normal life expectancy. Still, the diabetic is not as good as the normal individual whose functioning pancreas manufactures its own insulin. A healthy, normal body is best.

Body Pollution

There is an aggressive, active ecology movement in this country—regarding the pollution of rivers, streams and air, but not enough people worry about perhaps the greatest ecology problem of them all—the pollution of the body! In a sense, this is what happens when any type of an unnecessary chemical substance is taken. In the diseased, injured or deficiency states, drugs can be beneficial. Otherwise, they are pollutants.

The body is an incomparable, beautiful piece of machinery with its own industrial plants and waste removal facilities. Children need to be taught at an early age to have respect for their physiological systems. Older people, of necessity, must also show respect for their bodies.

Power of the Mind

Much can be done by learning to better use our minds and powers of cerebration. The power of the human mind to affect the well being of the body is amazing, but unfortunately the potential of this power has not been fully developed. It is intriguing that yogis can sit and contemplate their navels, slowing their pulse rates to 30 beats per minute through sheer concentration. There is a great deal to learn in this area of mind over matter.

It is not out of reason to expect that some day the school systems will offer courses teaching children how to "turn on" with their minds. It certainly will be a lot safer than dumping harmful chemicals into their bodies to "turn on."

It is important to keep in mind that the idea that something miraculous in terms of living will come from drug usage is false. Drugs create illusions but such illusions or fantasies never solve any of life's problems and, in fact, drugs damage the long-term health of the body. A real feeling of worth and a person's true image of himself comes only when he accepts and works within reality.

Ergogenic Aids

There are four general categories of ergogenic aids—aids used by athletes to supposedly increase their performance.

Physical and Mechanical—One of the most common aids used to supposedly increase work potential is oxygen. If one inhales oxygen prior to an event, it has been fairly well shown that it has no effect on work performance, speed, running ability or rate of recovery. If, however, oxygen can be given during the exercise period itself, workloads can be maintained for longer periods of time. Here is one of the areas that are still to be defined.

For instance, during a football or basketball game, is it wrong to have oxygen available at the sidelines? At a higher altitude many coaches will insist on it. The best scientific evidence says it is of little real value, because oxygen cannot be stored and can last no longer than two or three minutes unless the person can breathe it all the time. Of course, there may be some psychological help. The power of suggestion is great.

There are other physical ergogenic aids. The use of "negative ionization" and ultra-violet rays have been investigated and no evidence of increased ability or strength were shown, but some researchers felt the sense of well-being might be increased—suggested psychological assistance.

Massage could be considered a mechanical form of ergogenic aid and it has been shown to speed recovery from fatigue slightly, but no evidence of increased strength or performance can be demonstrated.

Exercise rituals would have to be considered mechanical ergogenic aids. Isometrics, isotonics, weight lifting and exercise stations all increase strength and possible work capacity in direct relationship to the amount of hard, demanding and persistent work done. A good conditioning and varied training program is the best and safest ergogenic aid known to date.

Nutritional Ergogenic Aids—Probably no area of ergogenic aids has received more attention than this one. When Herb Elliott, the Australian distance star, was eating oats and seaweed, many aspiring track stars were trying to consume the same crop. Herb Elliott also worked hard, ran a lot and ate a lot of normal, wholesome, well-balanced food.

Protein and amino acid supplements have been mentioned for years, but most scientific evidence shows that a well-balanced diet will supply all of the protein and essential amino acids necessary for any athlete. In fact, the major work in this area showed that a high protein diet requires as much as five per cent more oxygen for its metabolism; therefore, a persistent diet of this type was detrimental. This factor, along with the problem of digestion, should prompt an examination of the contents of the pre-contest diet.

All the scientific evidence seems to show that the excessive use of vitamins is over-rated. Americans put out the most expensive urine in the world. It is bright yellow, loaded with excreted vitamins. A well-balanced diet of fresh, well-prepared food will supply all the vitamins really necessary. At the same time, one should accept the fact that many of these nutritional substances may work psychologically, and, if not overdone, can cause no harm.

The basic needed elements, besides a well-balanced diet, are water, potassium and sodium chloride (salt). They are needed in hot weather for increased energy output, comfort, and even as protection for life itself. Yet some coaches still pride themselves on the spartan practice of allowing no water or electrolyte solutions during practices, no matter what the weather conditions.

Wheat germ has recurrently been used in many ways by athletes. No harm probably has ever been done by a moderate amount of wheat germ, so there is no reason not to use it (probably for psychological reasons). There certainly is little scientific evidence that would lend any support to its value. There are fairly large amounts of Vitamin E in wheat germ, which shows that it may be helpful to the oxygen utilization by the individual cells of the body, but scientific evidence on this point is far from conclusive. Time will tell on the importance of Vitamin E.

Numerous other nutritional and mineral substances have been used and will be mentioned only to state that they are readily supplied by a normal, adequate diet and need not be supplemented. They include calcium, magnesium, phosphorus, lecithin, phosphates, sodium citrate and bicarbonate, aspartic acid, coffee, tea, coke and gelatin. Nearly all of these have very little or no relationship to increased muscular performance in a well-conditioned, normally fed and properly hydrated athlete.

Psychological Ergogenic Aids—In this area the most noteworthy example would probably be hypnosis. It has been tried on numerous occasions in almost every sport. Hypnosis is the ultimate in suggestability and to a greater or lesser degree every coach tries to put inspirational or positive suggestions into an athlete's head. (There is no particular harm when hypnosis is done by a trained person who is not unrealistic in his request of the subject when hypnotized, but it has highly questionable value in sports).

Actually, many of the previously mentioned substances probably have their greatest effect because of psychological overtones. The human being is highly subject to suggestion and can be easily influenced—positively or negatively—by those around him, whether it be the coach, the trainer or the team physician.

Pharmacological Ergogenic Aids (Drugs)—This category has to do with the most dangerous and potentially harmful ergogenic aids. The two main families abused in this category, the amphetamines and anabolic-androgenic steroids, have been discussed previously.

There have been many other drugs and central nervous stimulants and depressants, heart stimulants, muscle stimulants and respiratory stimulants used or tried in athletics. A partial list would include caffeine, camphor, cocaine, tranquilizers, coramone, strychnine, metrazol, digitalis, roniacal, epinephrine, nitrites, cytochrome C, thiocyanate, veratrum alkaloids, rauwolfia, hydralazine, thyroid extract, adrenal cortical drugs and insulin.

This has been an attempt to cover a vast area in a limited space. It appears clear that an intelligent and sound coach, an interested and sincere trainer, a concientious and concerned team physician, all communicating well with each other, can be a real "ergogenic aid" to any athlete or group of athletes. The athletes know who is sincere and who is not. They also should know that hard work, sweat, self-discipline and sacrifice are necessary to produce the winning results they want. A good training and conditioning program is still the safest and best ergogenic aid.

What Others Are Saying

by Jim Bainbridge, *San Francisco Examiner*

San Francisco, Calif.—There is a growing tendency toward a strong law and order policy on drug use in college athletics. It is a problem that has grown rapidly as a reflection of a large change within the culture.

It is a problem that, up to now, has gone nearly unchecked.

"If we are to be effective," California team physician Dr. G. Jerome Patmont said, "in enforcing controls on drug use we must have a source of strength, someone who can enforce policy."

by Jim Moackler, *Des Moines Register and Tribune*

Des Moines, Ia.—Several years ago, a major university football team from the midwest played a game in high altitude country and won—perhaps because of capsules filled with brown sugar.

The coach of the team had worried about the effect the thin air would have on his players. The trainer decided what was needed was a "psychological lift."

The coach didn't know about those capsules until after the victory and none of the players knew what the capsules had contained.

"I'd sidle up to them, stick out my hand and whisper, 'Take this, it'll give you a lift out there,'" the trainer disclosed.

"It worked. Some of them came back to me and wanted another, saying the effects of the first one had worn off.

"The only trouble was that I had a heck of a time on the plane coming home trying to convince some of them that there wasn't anything in those capsules but brown sugar—I'd loaded them myself."

Even a seemingly harmless incident such as that worries leaders of the National Collegiate Athletic Association (NCAA), who are waging a concentrated battle against drug abuse by athletes.

"The fact that they would take those capsules without knowing what's in them scares me," said Tom Hansen, an assistant executive director of the NCAA . . . ."

What Others Are Saying

by Dwight Chapin, *Los Angeles Times*

Los Angeles, Calif.—Joe Antunovich has worked hard—very hard.

He is probably about two years away from his peak as a discus thrower, but it's very probable that in another year, after the Olympic Games, he will put his discus on the shelf.

He does not hesitate to tell you why.

"You invest a lot," he says. "You make a commitment to reach your potential and try to become the best in the world. You train awfully hard for six or eight years and then you can't get anywhere near the best because of what others are doing. At that point, you either jump on the bandwagon . . . or you quit."

The latter option appears to be the better one to Antunovich, a man who refuses to compromise his principles in many ways.

The bandwagon he is talking about is fueled by drugs, a subject he discussed candidly.

"Steroids and amphetamines are reasons I don't want to continue in track and field," Antunovich says, "Their use is going to multiply. I shudder to think what is going to be happening in 10 years.

"A lot of Eastern European countries are giving these drugs to their trackmen under the supervision of medical personnel, but it can't be proven. As far as I know, it's almost impossible to detect the use of anabolic-androgenic steroids."

Antunovich, 23, of USC is a big man and a skilled man—the Pacific 8 champion in the discus.

He doesn't take drugs but he says:

"Nobody would know it. In fact, I know a lot of people—including people in track and field—look at a man my size and say, 'A guy that big MUST be taking something.' "

by C. C. Johnson Spink, Editor and Publisher, *Sporting News*

St. Louis, Mo.—The board of directors of the National Trainers Association will come out soon with a strong stand against the use of non-therapeutic drugs in sports. Hopefully, this will be a major step in breaking the chain of dope abuse by some of our athletes.

What Others Are Saying

Houston Post
Houston, Texas—The NCAA and the American Football Coaches Association were urged Tuesday to assume a leadership role in fighting the spiraling use of drugs on college campuses.

A panel of experts told both their respective conventions that drugs merely bypass the senses and have damaging effects and that good training and condition routines are the safest and best programs for better athletic performances.

by Joe Hendrickson, *Pasadena Star News*
Houston, Texas—The danger in the growing use of drugs on college campuses was a matter for discussion in an interesting round table discussion Tuesday morning prior to the NCAA awards luncheon. Admiral Tom Hamilton, the retiring Pac-Eight commissioner, in one of his last acts as an NCAA member, keynoted the drug discussion by pleading to those in charge of sports programs to take the lead in influencing youth to reverse the growing use of drugs.

New York Times-Washington Post News Service
Dallas, Texas—The article in a national magazine put it in plain words:

"Drugs can kill sports."

Dr. Martin Blazina, the UCLA athletic team physician, says that use of drugs has spread to athletes as young as 14 or 15 years old.

There is no indication to what percentage of athletes might be doping themselves. But people in key educational and medical positions are worried.

Says Dr. Blazina:

"To me, the high school athlete is our area of greatest concern. Drugs can have a profound effect on a growing person. Growth can be restricted."

Milwaukee Journal
Chicago, Ill. (AP)—Drugs are no substitute for "good conditioning, excellent coaching and proper mental attitude" in athletics, says the team physician for Ohio State University.

It is morally wrong and illegal to dope race horses but no rules exist in American sports, Dr. Robert J. Murphy of Columbus told the American Medical Association convention Wednesday.

Summary of Federal, State Drug Laws

The Federal Government has been actively engaged in establishing a rational system of drug controls by consolidating drug control measures. The "Comprehensive Drug Abuse Prevention and Control Act of 1970," which came into full effect on May 1, 1971, is the result of these efforts.

The system of penalties contained in this comprehensive legislation provides a needed balance between the penalties to be applied to the drug trafficker and those to be applied to the simple possessor of drugs. These penalty provisions are based on the severity of the offense and the potential for abuse of the particular drug involved.

Today, the Federal penalty for the unlawful possession of controlled drugs for one's own use is not more than one year (a misdemeanor) and a procedure for expungement of record is available for first offenders who successfully complete probation. The Federal penalty for unlawful sale of controlled drugs ranges from not more than 5 years for most depressants, stimulants and marijuana, to not more than 15 years for sale of heroin.

In August of 1970, the Commissioners on Uniform State Laws adopted a comprehensive state drug control act which is similar in control and penalty features to the new federal law. As of April 1972, this Uniform State Act has been adopted by 30 states and many other states are considering such legislation. Most states that have enacted the Uniform State Act have adopted a misdemeanor penalty for a first offense of simple possession of controlled drugs.

As a practical matter, most drug offenses are prosecuted by state and local authorities rather than federally. In rare cases, when international or interstate aspects are present, or when federal agents are involved in cases involving large scale traffickers, federal prosecution will be undertaken.

NCAA Resolution on Drug Misuse and Abuse

A resolution which condemns the use of non-therapeutic drugs by any of its member institutions was passed unanimously by the delegates to the NCAA's 65th Convention in Houston in January 1971. The resolution:

WHEREAS, non-therapeutic drug usage described as doping is reported to be on the increase in the general college and youth populations; and

WHEREAS, the NCAA always has been opposed to non-therapeutic drug usage by student-athletes;

NOW, THEREFORE, BE IT RESOLVED, that the NCAA affirms its unequivocal condemnation of the employment of non-therapeutic drugs in any of its member institutions or affiliated organizations by staff members who authorize or allow their student-athletes to use such drugs and by student-athletes who do use such drugs;

BE IT FURTHER RESOLVED that all member institutions, their athletic staffs and their student-athletes aggressively assert their wholesome influences in combating usage of non-therapeutic drugs among the nation's youth;

BE IT FURTHER RESOLVED, that staff members or student-athletes who use drugs in a non-therapeutic manner in any athletic program are in violation of the principles of ethical conduct of the NCAA.

Adopted at NCAA Convention in January 1971

NCAA Drug Education Committee

The Drug Education Committee of the National Collegiate Athletic Association has produced this pamphlet to bring to coaches and athletes the latest and best information available on the problem of drugs and ergogenic aids in sports and in our society. Special assistance was given by the Preventive Programs Division of the Bureau of Narcotics and Dangerous Drugs.

A four-man committee launched an active in-depth drug education program for the NCAA. Chairman of the group is Robert W. Pritchard, director of athletics at Worcester Polytechnic Institute, Worcester, Massachusetts, who launched the NCAA Drug Education program in 1970. Current members of the Committee are Dr. Donald L. Cooper, former Olympic team physician and currently team physician at Oklahoma State University; Hardin Jones, Ph.D., research physiologist at the University of California at Berkeley; Alan Hart, head trainer at Ohio State University; and James H. Wilkinson of the NCAA Executive Office staff.

[Exhibit E]

INTERSCHOLASTIC SOUNDINGS

A column by the National Interscholastic Swimming Coaches Association of America by Walt Anderson, 1346 Clifton, Redlands, Calif., Past President NISCA 1955–57; past member of the Executive Committee of NISCA.

The NCAA, in its continuing attempts towards looking out for the health and welfare of the individual athletes competing in collegiate athletics, has published a pamphlet that should be required reading for every coach in the country. It's a short pamphlet on drugs; easy to read, free of detailed technical terminology, and filled with the kind of questions and answers a coach needs today.

The pace of the publication is set on page one with an open letter to coaches written by Robert W. Pritchard, chairman, NCAA Drug Education Committee, Worcester Polytechnic Institute. It reads as follows and is a direct quote:

"DEAR COACH: As a coach you should arm yourself with as much information on the drug problem as you possibly can. We want you to be able to 'rap' with youth. Understanding is the basis of all solutions. To recognize the symptoms and evidence of drug usage, one must know the tell-tale signs of experimentation and realize someone is in trouble.

"Further, how do you handle these problems? To whom do you talk? In whom should you confide? How do you react—do you kick the boy off the squad, or is that the worst thing you can do? We think this pamphlet will be helpful to you."

Soundings feels it is not helpful but that it is one of the most important coaching aids in print today because of the changing attitudes and lifestyles facing today's modern athlete. After reading the publication, your columnist was impressed by the way the drug problem, as it most frequently involves the athlete, is brought into perspective. There is no moralizing. Straight fact, proof through research, and statements by famous athletes and coaches pervade throughout the fifteen fascinating pages.

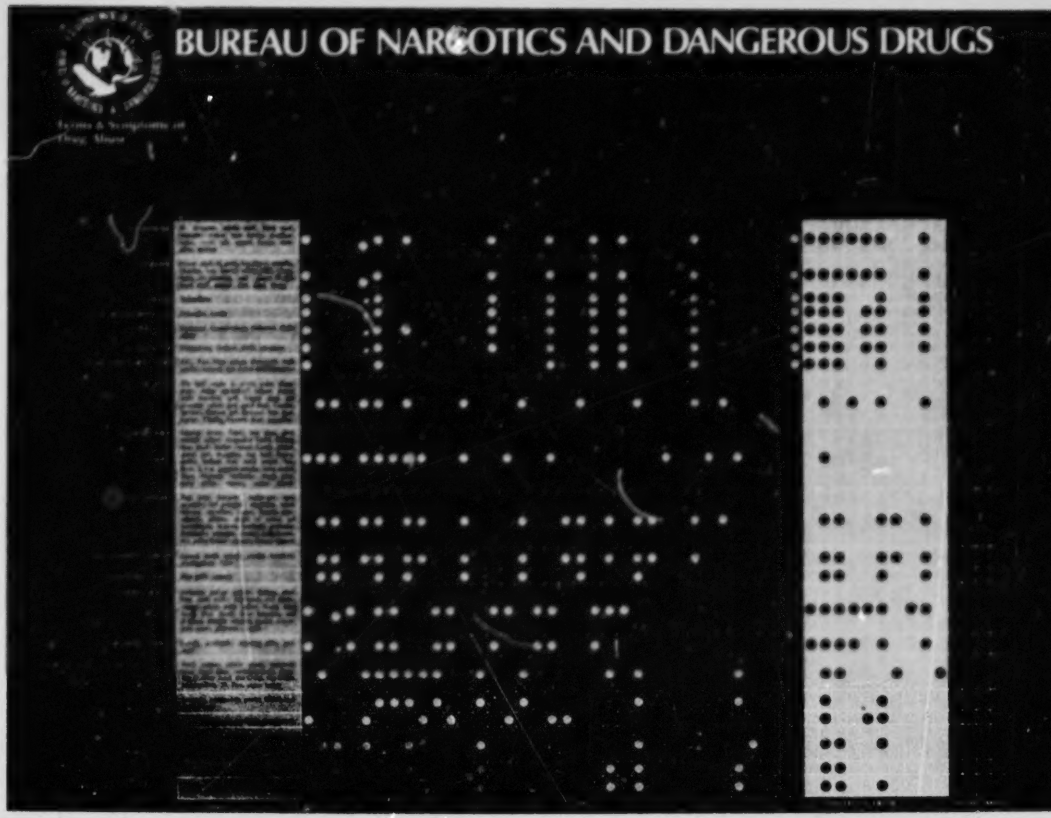
It contains a series of brief looks at the history of drugs in athletics, what a coach can do, recognition of the drug user, and the two drug families that athletes abuse—the amphetamines and the anabolic-androgenic steroids. The former includes drugs commonly called pep pills, bennies, eye-openers, lid poppers, uppers, browns, whites, etc. The latter are synthetic male hormones that are taken by some athletes with the intent of gaining weight and strength. The pamphlet tells of the best existing document on the subject that was published in the 1966 Journal of Applied Physiology by Dr. William M. Fowler, Jr., then of the UCLA Medical School and now at the University of California at Davis.

Since coaches exert such a great force of influence, Kenneth S. Clarke, Ph.D., a professor at Mankato State, says in the booklet that the coach "must take his counselor role seriously and not give tacit approval to dabbling (in drugs) by turning his back on the problem. Research has demonstrated that the attitude of the coach concerning health and safety matters is a strong influence on the attitudes of his athletes—and he should use it.

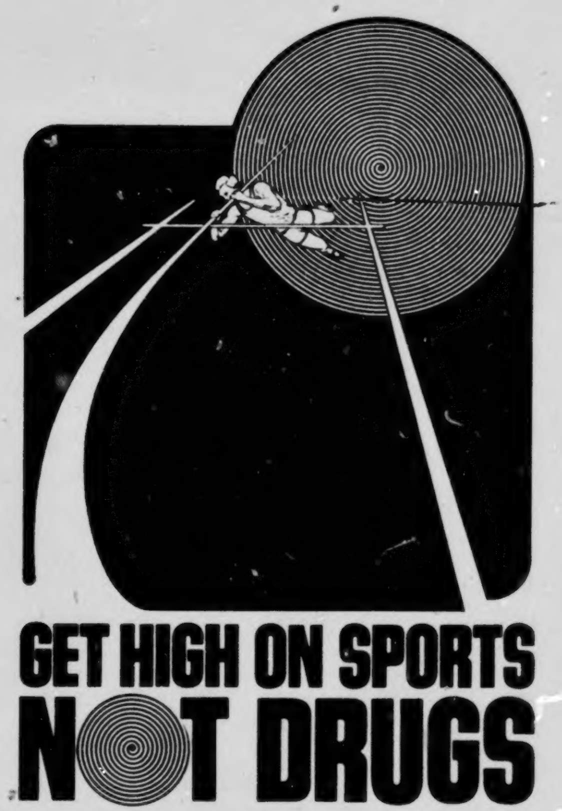
"What remains is to tell it the way it really is to athletes—that drug dabbling is far more apt to erode than enhance their normal capabilities in sport—and then put one's efforts doggedly into the ethics and competence of their leadership, medical and non-medical, for enforcement. Drug dabbling should be approached frankly, honestly, relying on the personal discipline that is asked for in coach's counseling on tobacco, alcohol, sportsmanship and other practices during the young athlete's formative years."

Copies of the booklet may be obtained from the National Collegiate Athletic Association, 1221 Baltimore, Kansas City, Missouri, 64105. They cost 25 cents per copy.

Exhibit F1


BUREAU OF NARCOTICS AND DANGEROUS DRUGS
Signs & Symptoms of Drug Abuse

[Exhibit G]



> "Hope always springs eternally that someone will find something that will make the weak stronger, the slow faster and the dull brighter. There's one overriding fact that I think should be continually reemphasized: To our knowledge, a normal, well-fed human being can never be safely improved upon by a drug."
>
> **Dr. Donald L. Cooper**
> **Olympic Team Physician, Mexico City, 1968**
> **Team Physician, Oklahoma State University**

This pamphlet is published by the National Collegiate Athletic Association in cooperation with the Fiesta Bowl, the National Federation of State High School Associations and the Bureau of Narcotics and Dangerous Drugs.

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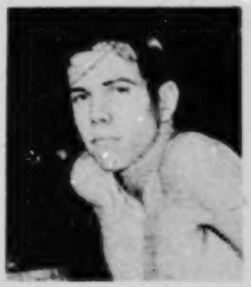
A Discussion of Drug Abuse for Athletes and Parents

By Hardin Jones, Ph.D.
University of California, Berkeley

A notion in this country and all over the world is that there are "super" drugs, or miracle drugs that can do things for people that they can't do for themselves. One thing should be made clear: There is no drug that can safely make anybody better than normal.

Athletes may be approached to become involved with sensual psychoactive drugs, now commonly used for pleasure through intoxication, hallucination, stimulation or sedation. Millions of young men are involved in such experimentation, and many have developed a form of drug dependency or have incurred health and mental impairments. Drug abuse is so widespread that no person can afford to be unprepared to face social pressures to try drugs. Those who have become involved are always surprised to find that their exposure to drug-taking comes through friends—usually a close friend.

- Athletes may be offered the use of stimulant medications as a means of overcoming drowsiness and fatigue, and perhaps use them under the erroneous assumption that these stimulants increase speed and strength.
- Sometimes tranquilizers are used to quiet the natural pre-performance tensions. The use of tranquilizer drugs may calm, but they also certainly suppress the ability to mobilize the adrenal hormones during athletic performance.
- Stimulant drugs do end drowsiness, but the real excitement of the field does it naturally. Stimulants only interfere with natural functions, and they can lead to kinds of drug dependency because they disturb the functional balance and cause psychic effects.
- Athletes develop powerfully responsive adrenal glands as well as powerful responsive muscles. Athletic events require precisely controlled outpourings of adrenal hormones. Taking stimulants always decreases the ability of the adrenal gland to respond to natural controls.
- Muscles and nerves, pre-stimulated by drugs, do not have the usual reserve capacity or the sensitivity to mobilize these reserves. If it had been the case that stimulants imparted the advantages that are falsely claimed, the gains would have been easily demonstrated. The fact has been shown that illicit drugs have been detected much more often in losers than in winners.
- Athletes must depend on health, training, conditioning and rest. No drugs will make any body function more responsive, better timed, faster or more powerful.



"Perhaps the best way to approach the problem of drugs in our society is to look for changes which may have caused the problem. Only after solving the problems leading to drug problems can the drug problem, itself, really be solved."

"One of the biggest challenges this country faces is a declining standard of morals. Many media, such as magazines, books and the cinema, influencing our society have become infested with vile material. By accepting this 'smut' we are accepting lower moral standards.

"The danger and consequence of changing standards is that too many people can no longer determine what is right from what is wrong, or even what is normal from what is abnormal. And, unfortunately, far too many have accepted drugs as a normal way of living.

"It's tragic that such an unnatural and dangerous thing as using drugs could ever become accepted in such an 'intellectual' society."

Gary Hall, Indiana University
Six-Time NCAA Swimming Champion

Athletes have powerful bodies and they have developed, as a consequence, more capacity for sensual stimulation; for example, the capacity for sexual activity is greater in the athlete. The sensual drugs (including marijuana, alcohol, amphetamines, barbiturates and narcotics) all tend to stimulate pleasure mechanisms in the brain. The commonly abused narcotic, heroin, gives an artificial sexual sensual rush, but leaves the person for a long time incapable of usual sensual and sexual satisfaction. These changes may be induced in a day and persist for weeks even before heroin addiction has become established. All the sensual drugs diminish the natural sensual satisfaction, and with sufficient use, they produce sexual impotency and other kinds of sensual insufficiencies. Heroin may do this in a few days; other drugs may require months or years of abusive use to produce such severe sensory impairment. It is clear that direct and unnatural titillation of the gratification mechanisms by drugs leads to less natural responses, and these changes occur in athletes even though the effects may be less noticeable for a while because of the greater functional reserves of the athlete.

Athletes need great coordination and control over their body movements. The sensual drugs also cause various kinds of loss of fine coordination. This is true of all forms of intoxication. But most people do not realize that some of these effects persist long afterwards. Marijuana, alcohol, barbiturates and amphetamines are likely to have such persisting effects. All the sensual drugs upset coordination.

Athletes are now often tempted to use artificial male hormones (known as the androgenic anabolic steroids) as means of increasing physique. It is certain that the use of these artificial hormones decreases natural testicular function, may cause many difficulties with the organs of reproduction and almost certainly cause disturbances of the many steroid hormones. Long-term problems are almost certain to be observed as a result of the use of these drugs although long-term effects have not been tested. The immediate gains of strength that are claimed are not as yet substantiated. If the claims are real, then for those who qualify by such unnatural means, the degree of success may depend upon tolerance of these hormone imbalances. This is, of course, a travesty of the long-tested benefits of building physical strength and character through athletic training.

In all the above matters relating to the possible harm from drug abuse, parents have an important role. They can have a great influence over their children. Most parents have successfully imparted a set of values, a sense of purpose and some reasons for life. In today's turmoil, parents must do more. To prevent the spread of drug abuse, parents must be alert to recognize the conditions and symptoms of drug use. They must learn to oppose these influences and to give sound advice to their children. It is often said that parents tend to exaggerate the hazards of drugs because they are more concerned than informed. They must become knowledgeable if for no other reason than the fact that no argument loses more quickly than that which is revealed to lack accuracy. Besides, there are so many frightful factual statements to be made about the hazards of drug abuse that there is no need to exaggerate.

Parents should inform those who are responsible for their children in school or in athletics that they expect to know about drug use by their dependents. Parents should advise their children about drugs and should work with school, community and athletic leaders to support cautionary advice on the subject. The least involvements of young people with drug abuse today are traceable to strong influence by parents who oppose the trend to use drugs.

Drugs and Athletics Do Not Mix

Anabolic-androgenic steroids:

(An" ah-bol' ik)—pertaining to, characteristic of, promoting anabolism or constructive metabolism.

(An" dro-jen' ik)—producing masculine characteristics.

(Ste' roid)—a group name for compounds which resemble cholesterol chemically. Some of the substances included in the group are the sex hormones, cardiac aglycones, bile acids, steroid proper, toad poisons, saponins and some of the carcinogenic hydrocarbons. (Dorland's Illustrated Medical Dictionary)

The anabolic-androgenic steroids (synthetic male sex hormones), which resemble chemically and functionally the male sex hormones, are taken by athletes with the intent of gaining weight and strength. Many athletes think that increased body weight results in increased muscular strength.

While the drug may increase weight, much of it is due to fluid retention, and this does not necessarily result in an increase in strength. The only way to make a muscle fiber get larger and stronger is to overload and fatigue it.

Anabolic-androgenic steroids have been known to cause premature closure of the growing plates in the long bones in younger athletes, liver damage and aggravation and stimulation of the growth of any pre-existing cancers or hormone sensitive tumors.

Amphetamines (am-fet'-ah-min) are the "paradoxical" drugs.

Other names: Pep pills, bennies, wake-ups, eye-openers, lid poppers, co-pilots, truck drivers, peaches, roses, hearts, cartwheels, whites, coach to coast, I. A turnabouts, browns, footballs, greenies, bombido, oranges, dexies, jelly-beans, A's, jellie babies, sweets, beans, uppers, ephedrine crystal.

Amphetamines are used to stimulate the central nervous system, increase blood pressure, reduce appetite and reduce nasal congestion. (Dorland's Illustrated Medical Dictionary)

Athletes have taken them for years to supposedly run faster, pump harder or jump higher, but in reality they may have a reverse effect. When an athlete takes an amphetamine he may think his performance is superb, but in reality he is probably doing worse.

The amphetamines lessen a person's ability to recognize possible dangerous fatigue sensations, constrict blood vessels and suppress appetite by stimulating the central nervous system. They can be highly dangerous. They can also cause dangerous heat buildup in the body by the non-recognition of fatigue.

Message to the Student-Athlete

"Get High on Sports . . . Not Drugs."

It is a super idea, yet some are not convinced that drugs and athletics do not mix.

Athletes have experimented with an endless variety of drugs but, based on scientific evidence, it is difficult to find anyone who has safely improved his performance.

On the other hand, the taking of pharmacological aids has proved to be a hazardous venture for some—leading to permanent injury and death. And yet to be known are the long-range effects drugs might cause.

Did you know that by the time they are 20, today's children will have watched approximately 15,000 hours of television? During this time they will have seen numerous commercials telling them that drugs can calm their stomach, quiet their nerves, clear their complexion, improve their performance on the job and relieve their aches and pains. Really, is it any wonder they might grow up thinking drugs are the answer?

Drugs do have a very necessary application, but the only time to use drugs or any kind of chemical substance is when a diseased, injured or deficient state exists, and then only under the direction of a physician.

Listen to the advice of John Brown, the University of Missouri's All-American and member of the U. S. Olympic basketball team: "Sports have been good to me—and for me. The drug scene is only for losers and dropouts from the world."

A Message From the Director of the Bureau of Narcotics & Dangerous Drugs

"Our nation has always been proud of its athletes and of their performances in all kinds of competition. Millions of Americans, young and old, who participate in sports of all kinds have been justly proud of their sportsmanship.

"Today, a problem has arisen in a minority of athletes. The 'win at any cost' attitude has caused a few to turn to the illicit use of drugs in an attempt to increase performance. This has sometimes resulted in injury to athletes. But even if no apparent physical harm results, the damage to the athlete, ethically and psychologically, can be severe. And the damage to the American concept of sportsmanship may be irreparable if such misuse of drugs continues and increases."

John E. Ingersoll

This publication is printed on 100% recycled paper.

[Exhibit H]

[From the National Collegiate Athletic Association News, June 15, 1973]

FIESTA BOWL COMPLETES $30,000 DRUG EDUCATION PLEDGE YEAR EARLY

The Fiesta Bowl Committee has completed its pledge of $30,000 to the NCAA Drug Education Committee a year ahead of schedule.

The Fiesta Bowl Committee presented Dr. Robert W. Pritchard, NCAA Drug Education Committee Chairman and a member of the NCAA Council, with a $10,000 check at a spring banquet in Phoenix, Ariz.

The original committment of the Fiesta Bowl was to have been spread out over two years. The $30,000 was paid in the span of one year in three different $10,000 installments.

The Fiesta Bowl doesn't plan to stop because the committment has been met.

"We have decided to continue our support of the NCAA Drug Education committee," said Fiesta Bowl Executive Director John Reid. "We haven't put a dollar figure on our next committment. Hopefully, it will match or exceed this past committment."

Pritchard extended his thanks to the Fiesta Bowl at the banquet. "It is greatly appreciated and I reassure you that the combination of the NCAA and the Fiesta Bowl assures us opportunities to reach tens of thousands of young people who otherwise would not be contacted in the education and the combating of this terrible social problem," he said.

The Fiesta Bowl's contributions will be used in the NCAA Drug Education programs, including literature, publications and posters.

[Exhibit I]

THE NATIONAL COLLEGIATE ATHLETIC ASSOCIATION,
Kansas City, Mo., March 1, 1973.

DEAR ATHLETIC DIRECTOR: The NCAA Drug Education Committee has a questionnaire which will provide valuable information on the possible use and extent of drugs and other substances by college athletes. This is an anonymous and voluntary questionnaire of two pages that can be completed within a few minutes. We do not want individual names nor will the colleges be identified. The returned questionnaires will be mixed immediately with all questionnaires received.

The Committee woud like a random selection from all eight NCAA districts. Large schools—small schools—public supported and private colleges will be included. Presently, we are interested in responses from squads of the following sports: football, soccer, basketball, swimming, wrestling, track and field and baseball. If your school does not have all the sports listed, you could still participate in those areas where you do have squads listed.

This easy to administer questionnaire will be one means of determining if a drug problem exists in NCAA college athletics. *Remember, no school or athlete would be identifiable.*

Please indicate on the enclosed return postcard your willingness to help the Committee by participating in the survey. Since we are seeking a random sampling, it is possible your school would not be sent questionnaires, for if we were to receive affirmative responses from nearly all of the membership, we would not need all such questionnaires for the study. The responses will be correlated by a computer.

You will have an opportunity to receive all results, if you so desire.

The Drug Education Committee feels sure you share our concern with the drug problem in today's society, and further, that the NCAA is in a position to make a genuine contribution to this most crucial social problem.

We look forward to your continued cooperation. Please return the enclosed card today.

Sincerely yours,

ROBERT W. PRITCHARD,
Chairman, NCAA Drug Education Committee.

Enclosure.

________________________ is willing to take part in the survey being conducted
College
by the NCAA Drug Education Committee. You may send us approximately ____________ questionnnaires. We understand no individual or college will be identified.

Signed ________________________
Name and title

THE NATIONAL COLLEGIATE ATHLETIC ASSOCIATION DRUG USE QUESTIONNAIRE

The NCAA Drug Education Committee is seeking your assistance in an attempt to obtain information concerning drug use among athletes. Your answers to these questions will assist the Committee in making recommendations concerning the types of educational programs needed in this area.

Do not put your name anywhere on the questionnaire. Please answer all questions honestly. There are no code numbers or any other means of identifying an individual's answer sheet.

Record your answer by circling the number of your choice on each questionnaire. Be sure to read the entire list of choices before marking your selection and please circle only one answer for each question.

The National Collegiate Athletic Association
U.S. Highway 50 and Nall Avenue
P.O. Box 1906
Shawnee Mission, Kansas 66222

1. What is your present classification in school?

1. Freshman
2. Sophomore
3. Junior
4. Senior
5. Graduate Student
6. Other

2. What is your sex?

1. Male
2. Female

3. What is your race?

1. Black
2. White
3. Other

4. Circle your major sport.

1. Football
2. Soccer
3. Basketball
4. Swimming
5. Wrestling
6. Track and Field
7. Baseball
8. Others

5. How is your physical condition?

1. Top
2. Moderate
3. Fair
4. Poor

6. Are you receiving medical care for a health problem at this time?

1. Yes
2. No

7. Do you use Aspirin?

1. Have never [illegible]
2. Use about once a month
3. Use about once a week
4. Use 3 or more times a week
5. Tried a few times and stopped
6. Used many (10 or more times) and stopped

8. How many hours of sleep do you generally get at night?

1. 5 or less
2. 6
3. 7
4. 8
5. 9
6. 10
7. 11 or more

9. When you first get up in the morning, how do you feel?

1. Very good
2. Good
3. Bad
4. Very bad

10. What percentage of the college athletes you know personally use drugs to try to improve their sports performance?

1. none or 0%
2. 1-2%
3. 3-5%
4. 6-10%
5. 11-20%
6. 20-40%
7. 41% or more

11. How would you rate your athletic ability?

1. Very good
2. Good
3. Adequate
4. Poor
5. Very poor

12. What was your grade average in all subjects last term?

1. A
2. B
3. C
4. D
5. F

13. Do you use coffee?

1. Have never used
2. Use about once a month
3. Use about once a week
4. Use 3 or more times a week
5. Tried a few times and stopped
6. Used many (10 or more times) and stopped

14. Do you use tea?

1. Have never used
2. Use about once a month
3. Use about once a week
4. Use 3 or more times a week
5. Tried a few times and stopped
6. Used many (10 or more times) and stopped

15. Do you use tobacco?

1. Have never used
2. Use about once a month
3. Use about once a week
4. Use 3 or more times a week
5. Tried a few times and stopped
6. Used many (10 or more times) and stopped

16. Do you use Alcohol (Beer, Wine, Whiskey, etc.) to get high?

1. Have never used
2. Use about once a month
3. Use about once a week
4. Use 3 or more times a week
5. Tried a few times and stopped
6. Used many (10 or more times) and stopped

17. Do you use multiple vitamins?

1. Have never used
2. Use about once a month
3. Use about once a week
4. Use 3 or more times a week
5. Tried a few times and stopped
6. Used many (10 or more times) and stopped

18. Do you use vitamin C tablets?

1. Have never used
2. Use about once a month
3. Use about once a week
4. Use 3 or more times a week
5. Tried a few times and stopped
6. Used many (10 or more times) and stopped

19. Do you use vitamin E capsules?

1. Have never used
2. Use about once a month
3. Use about once a week
4. Use 3 or more times a week
5. Tried a few times and stopped
6. Used many (10 or more times) and stopped

20. Do you use nicotinic acid pills?

1. Have never used
2. Use about once a month
3. Use about once a week
4. Use 3 or more times a week
5. Tried a few times and stopped
6. Used many (10 or more times) and stopped

21. Do you use cortisone?

1. Have never used
2. Use about once a month
3. Use about once a week
4. Use 3 or more times a week
5. Tried a few times and stopped
6. Used many (10 or more times) and stopped

22. Do you use anabolic, androgenic steroids (so called body building hormones)?

1. Have never used
2. Use about once a month
3. Use about once a week
4. Use 3 or more times a week
5. Tried a few times and stopped
6. Used many (10 or more times) and stopped

23. Do you use sleeping pills?

1. Have never used
2. Use about once a month
3. Use about once a week
4. Use 3 or more times a week
5. Tried a few times and stopped
6. Used many (10 or more times) and stopped

24. Do you use aspirin?

1. Have never used
2. Use about once a month
3. Use about once a week
4. Use 3 or more times a week
5. Tried a few times and stopped
6. Used many (10 or more times) and stopped

25. Do you use tranquilizers?

1. Have never used
2. Use about once a month
3. Use about once a week
4. Use 3 or more times a week
5. Tried a few times and stopped
6. Used many (10 or more times) and stopped

26. Do you use Marijuana or THC (Pot, Grass)?

1. Have never used
2. Use about once a month
3. Use about once a week
4. Use 3 or more times a week
5. Tried a few times and stopped
6. Used many (10 or more times) and stopped

27. Do you use LSD (Acid), mescaline?

1. Have never used
2. Use about once a month
3. Use about once a week
4. Use 3 or more times a week
5. Tried a few times and stopped
6. Used many (10 or more times) and stopped

28. Do you use Cyladil (Grit)?

1. Have never used
2. Use about once a month
3. Use about once a week
4. Use 3 or more times a week
5. Tried a few times and stopped
6. Used many (10 or more times) and stopped

29. Do you use Amphetamines (Uppers, Speed, Pep Pills, Bennies)?

1. Have never used
2. Use about once a month
3. Use about once a week
4. Use 3 or more times a week
5. Tried a few times and stopped
6. Used many (10 or more times) and stopped

30. Do you use Barbiturates (Downers, Reds, Blues, Yellows)?

1. Have never used
2. Use about once a month
3. Use about once a week
4. Use 3 or more times a week
5. Tried a few times and stopped
6. Used many (10 or more times) and stopped

31. Do you use Heroin (Horse), Morphine (Miss Emma), or Demerol?

1. Have never used
2. Use about once a month
3. Use about once a week
4. Use 3 or more times a week
5. Tried a few times and stopped
6. Used many (10 or more times) and stopped

32. Do you use Cocaine (Snow, Coke)?

1. Have never used
2. Use about once a month
3. Use about once a week
4. Use 3 or more times a week
5. Tried a few times and stopped
6. Used many (10 or more times) and stopped

33. Do you sniff glue, lighter fluid, gasoline, or paint thinner?

1. Have never used
2. Use about once a month
3. Use about once a week
4. Use 3 or more times a week
5. Tried a few times and stopped
6. Used many (10 or more times) and stopped

34. Do you think drug use among athletes is increasing or decreasing?

1. Increasing
2. Decreasing
3. Staying the same
4. Don't know

35. How would you rate your school's efforts in helping you to understand about drugs?

1. Excellent
2. Good
3. Fair
4. Poor

36. Have you ever used a drug to try to improve your sports performance?

1. never used
2. 1 or 2 times
3. 3-7 times
4. 8-15 times
5. 16-25 times
6. 26 or more times

37. What percentage of professional athletes do you believe use drugs to try to improve their sports performance?

1. none or 0%
2. 1-2%
3. 3-5%
4. 6-10%
5. 11-20%
6. 20-40%
7. 41% or more

38. Please list any prescribed medication(s), you may be taking now, if you know what they are:

[Exhibit J]

NCAA BYLAW 4-2

SECTION 2. Drugs. Student-athletes competing in NCAA championships shall not use any unauthorized drugs which may endanger their health or safety or which may seemingly give an unfair competitive advantage to an individual competitor. This does not preclude the use of drugs prescribed by a physician in the course of medical treatment. (Adopted: 1/13/73)

(a) The Council shall, from time to time after enlisting expert advise and study, enumerate the drugs which may not be used. (Adopted: 1/13/73)

(b) The Executive Committee may authorize urinalysis or other methods for testing student-athletes who compete in NCAA championships to determine the extent of drug usage therein. (Adopted: 1/13/73)

Senator BAYH. Our next witness will be a panel of witnesses with Mr. Wali Jones, Harold Nelson, Michael Dyer, and Dr. Russell Cassel. Gentlemen, will you all come forward?

We appreciate your coming here today. Would you identify yourselves, Mr. Jones and the others?

STATEMENT OF WALI JONES, EXECUTIVE DIRECTOR, CONCERNED ATHLETES IN ACTION, ACCOMPANIED BY HAROLD NELSON, MEMBER; MICHAEL DYER, MEMBER; AND DR. RUSSELL CASSEL, MEMBER

Mr. JONES. My name is Wali Jones, the executive director of Concerned Athletes in Action. We have 16 chapters in the United States.

I am from Philadelphia. I was born in 1942. I have to differ first on some comments that were made earlier about the term "hysteria" about drugs being in the communities. I have to say the choice of the term is correct because we are hysterical in our communities because there are drugs everywhere.

Another point I would like to express, I have played professional ball for 9 years. I have played in the Philadelphia high schools and Villanova University.

I worked for 16 years with youths. I traveled the eastern seaboard in which I worked for the Bucks so I had a chance to go to the campuses. I also got a chance to instruct in New York, New Jersey, Richmond and at all of these areas in all of these communities, through this, what I am getting at is the idea of drugs being in all of our communities. I know this from working in them. I don't either think we should speak about just the level of high school or colleges or professional ball. We should go into elementary school level.

Now, I am from the Milwaukee area and we have a chapter there. We had an 8 year old die from an overdose of drugs.

Now, we feel, as Concerned Athletes in Action that it starts at that age and not at the high school or college level.

Athletics are part of our wisdom, are a part of our culture. Sports is a part of our culture because that is what we have to emulate when we are young.

When I was young I had people like Guy Rudgerson and Wilt Chamberlain; during that era of course—and I was around 15 or 14 years old—during that time there was the era of drinking. The youth of that time were drinking. They were drinking a lot of wine.

Now right now there is being done a doctoral study of this very thing. And in traveling around the country there is a vibration I have been feeling of hysteria. They say we shouldn't be hysterical, but we are hysterical about the drug situation. Young people are dying in some of these areas.

And, you know they say they shoot horses, don't they. I have to say this is true and they not only shoot horses, but they shoot athletes also.

During my 9 years of professional ball, in that time I saw a lot of the pressures the young had to go through in the ghetto areas.

The only emulation a young person has to get out of is to emulate an athlete or entertainer or the pusher who is on the corner. So these are the three models.

Now, I had the chance of getting out of the alcohol scene by athletics. One of my brothers is an ex-addict and one of my brothers is an alcoholic. These are things that happen that are all around us and——

Senator BAYH. Let me ask you, if I may Mr. Jones, for the record, you played basketball at Villanova and you also played professional ball at Philadelphia and also for the Bucks?

Mr. JONES. I played in Baltimore.

Senator BAYH. You were all pro at one time or another?

Mr. JONES. I made the all-rookie team.

Senator BAYH. So you are pretty good?

Mr. JONES. Well, I feel I am.

As I was saying, there are a lot of young people who want to be just as good and want to emulate and they have their hopes up in this.

I see in the Philadelphia area—and they were talking about things being cut out now. That is a disaster area to me. That is a tombstone territory. The young people there emulate the athletes very much. There are a lot of athletes I know in college who quit in the past 3 years because they couldn't reach this point of professional sports or because they couldn't achieve certain things and so they just dropped out and take drugs.

Now when I speak of the pressures that atheletes have, the pressures that a black athlete has, the pressures that I had in going out for the Olympic trials, the pressures that I knew then—and at that time I felt I should have made it and there was John Wooden who felt I should have made it but I didn't make it—but the pressures I felt athletes are feeling today.

Now there are athletes that I know of who have reached out and gotten into drugs because they couldn't accomplish these things.

When I say pressures, again, I am speaking of pressures like for instance my first year in professional sports. I lived in the District of Columbia and I was commuting from the District of Columbia to Baltimore. At that time there were the pressures of economics; the salaries weren't that much for those coming out of college at that time.

When I speak of pressures, I am speaking of the different pressures that young athletes feel at that young age; the thing that they have to go through. And since this is a drug oriented culture, they are not drifting into drinking, they are drifting into drugs.

Now when I speak of pressures, I mean there are athletes that we know of who have come out of high school and college and who we talk to and try to counsel. We try to stop them from the drug scene there but now we are trying to catch them at the age of elementary levels because there was an 8-year-old death in Milwaukee from an overdose.

So that is why I said I have some difference about the level of educating the people about these dangers. We must start at a lower level.

Senator BAYH. I don't know who you are differing with. You are not differing with me.

Mr. JONES. Well, I have to differ because of the way the system and society is going; do you see?

There are many kids that are dying.

Like you made a comment about this; should we have courage to do something? Now, it is humanistic to save these people because in this Philadelphia area there were 65 killings related to drugs or gang killings.

Senator BAYH. My comment went, Mr. Jones, to the fact it shouldn't take much courage to stand up and say we are not going to tolerate this whether it is on the pro-athletic floor or the NCAA championships or an 8th grade gym class or an 8-year-old in the community.

Mr. JONES. Right. That is right.

Senator BAYH. This is the kind of thing I would think it shouldn't take much courage to do but just a little common sense and humanism.

Mr. JONES. That is what we are coming to.

You have another pressure I also think in sports in the emulation the imitation and that is the pressure of having to produce.

Now when I was in college I played a whole year with a torn cartilege in a brace. Whether that decision came from me as an individual or whether it came from the pressures of the situation, I don't know. I played for the Wildcats and whether it was the gung ho attitude or just the pressure of an athlete who is black who wants to keep advancing, I don't know but I played a whole year with a torn cartilege and my leg would rock periodically

I was under different medications, and different treatments. So there is also the pressure which is a psychological pressure; that they have to produce.

That is why I say they shoot horses, don't they? They not only shoot horses to play but after they play they shoot them. I mean, they lose their jobs if they aren't competitive.

When I played 4 years ago, I had an operation and there was an estimation of time I was supposed to be in the hospital for and that was 4 weeks. This was their estimation. There was pressure on me to play in 4 weeks. But I was an individual again, I learned through the process of experience to withstand that pressure and I just sat out until my leg was thoroughly well.

These are pressures put on a lot of young athletes. A lot of young athletes want to produce so badly, this is what happens. You asked why they would take these drugs, and these young athletes are in such a state—and when I am talking about "state", I am talking about the individuals wanting to become No. 1 or become a professional athlete—they are in such a state they will take them.

You say you hurt your ankle and yet went out to play, but there are some athletes that are psychologically forced into situations where they have to be shot with Novocain to play. This is something that happened to me. This is testimony that is personal, you know, because I had a torn muscle in my back and the pressures were put on, like, you know, this won't hurt you and this will only help the pain stop. But I was shot in the back with Novocain and my whole side, I couldn't move it for a couple of days.

When I went back to the physician in Philadelphia, my physician, the physician said I should never have been shot.

Senator BAYH. Who made that determination to shoot you, though?

Mr. JONES. Yeah, they shoot you here in the joint [indicating].

Senator BAYH. No, who made the determination?

Mr. JONES. Well, this is the trainer who makes that.

You know, when I say the pressures of management to get an athlete out on the field, that is what I mean and that is why I say they shoot horses, don't they? You know, the pressures to put an athlete out there, and especially a black athlete, to perform is just intolerable.

Senator BAYH. Was this trainer a doctor?

Mr. JONES. No. And when you have a trainer and you put your trust in the trainer in these levels of sports, you are going to do what he says, you know, you figure he knows best. You know, there was another physician from another team and when they shot me up and I couldn't play and went back to the Philadelphia area, my physician said I should have never been shot. But these are different pressures, I feel the sports are putting on the athletes.

When I travel to campuses, here we have an industry of thousands and thousands of basketball players all over the United States trying to become professional and also because they are trying to emulate athletes who are people they look up to, in certain communities such as the black community, they only have so many people to emulate. The professional athlete has such a force in the community—and that is something that hasn't been commented on by the NCAA and by other people—that these young basketball players try to emulate the professional player.

The image the athlete brings to the community as a professional athlete is very great in all sports. That is why I say, not only at the high school and college and professional level, but young people are trying to emulate these professional athletes and are forcing themselves into the position of becoming the best.

There are a lot of drugs in the early ages—in junior high schools and elementary level— and there are statistics on this. We are talking about cases where young people are dying, where young people are taking speed for the races and sports, where young people are taking other drugs, as I said before, drugs to escape.

Now, as a Concerned Athlete in Action, as concerned athletes, we have a philosophy in which we feel that athletes themselves coming within the community and working with the young people at such a young age will help a lot. Working with them through basketball clinics and drug seminars gives them a chance to release; they get a chance to express themselves in some manner and we can educate them there.

Senator BAYH. May I ask you to give me your thoughts on the same question that I directed to Mr. Wilkinson. I don't want to advise our our friends from the television sector over here as to what they ought to shoot and what they should not shoot, but here is a man who has been through this and knows the pressures, and also comes from a community where the contribution that an athlete can make to try to get young people to think bigger thoughts and to resist the temptation to take the escape route, and are getting that monkey on their back, that pressure is great. Does it make any sense if we are really concerned about drug traffic and drug addicts and wasted lives and deaths, to terminate those programs that make it possible for youngsters to have an experience in the summer with athletes and others stressing the wholesome aspect of athletics and the dilatory aspects of drugs? Does it make any sense to cut the budget and to terminate these programs?

Mr. JONES. It is not just inhuman; it is unhuman. It has gotten to the point where we have to look at the generation that is coming up. You know, the Creator is looking at man and the way he is treating his young. Animals in lower forms treat their young better than man. They prepare their young for their environment. When I speak of their environment, the environment now in the ghetto areas is getting to where it is paranoia; it is fear. It is drug infested and people are dying every day and young people are experiencing these things. It will be the last generation if we don't protect, educate, and love our young.

Senator BAYH. Do athletic programs and summer sports programs and this type of thing have a positive effect on young people born in the ghetto to try to convince them not to go the route of drugs?

Mr. JONES. Definitely. We had a marathon last week. We called it a sensitivity session. We brought young kids in. We let a gymnasium remain open for 48 hours. We had everybody come in and play in this marathon, just anyone. It gave a chance for the kids who were idle—and as we say, idle minds are the devil's workshop—to come in and participate. But since all of these programs are cut and all of these kids don't have anything to do, we had to have some kind of activity where they could release their energy. Well, we had this marathon. While we had this, they were releasing their energy, they were being educated, they were getting together. We felt the marathon was a positive force because while they were playing, they got a chance to sit around and talk with us about drugs. They got a chance to holler their names out when they scored.

All ages got a chance to play. They came from all communities. They got a chance for release. They had a chance to go somewhere when they didn't have anywher to go before.

Kids at 11 and 12 o'clock at night who had been playing on the streets, these kids were then coming to the recreation center. And I think centers should be open. Centers should be open at all times because during the summer we know kids are going to be up until 3 or 4 o'clock in the morning.

We had a chance here to bring elders into the community and into this recreation center where kids could talk to them. We even had a chance to educate the elders on the dangers of drugs because there are many, many elders that don't even know the symptoms of drugs and how it effects your mind.

Now, I would like to have Mr. Nelson expound on why we are into this marathon for kids.

Mr. NELSON. Well, I was going to say one of the reasons we hope they will remain open, the centers will remain open, is because it is too hot to sleep in their homes. I mean, it is really too hot there so how can you sleep? They are going to be up. And since they are going to be up, you might as well provide some kinds of facilities for them.

Well, let me just introduce myself. First of all, I am Howard Nelson and am affiliated with Concerned Athletes in Action. I am also a school teacher in the Milwaukee School, System; I am a counselor and counsel in the elementary level at Palmer in Chicago.

I have worked with kids, I became quite involved and interested in the kids and wanted to do something to save the children. The best way I knew of to save the children was to be associated with a program, with an organization such as Concerned Athletes in Action.

Right now I would like to relate to you and the rest of the people here what we are trying to accomplish as Concerned Athletes in Action.

Today's problem of drug abuse in our society, when viewed from our position, constitutes a clear call for action since we are aware of what is happening in our community. And this is one of the reasons that we formed the Concerned Athletes in Action because we do want all segments of society to be enlightened in the area of drugs so that the Nation's youths would be exposed to correct information.

And we are aware of the kind of publicity being devoted to drug abuse in the schools in our country through such things as newspapers, magazines, and other media. We are a little troubled understanding why, since if we wished an individual to play the piano or improve in arithmetic competency, it will be a necessity to provide learning experiences in such areas, we have a little trouble understanding why there is not such learning experience with drugs.

This is what we are trying to do, as Wali stated earlier, as Concerned Athletes in Action. We go to the kids, sit down, have rap sessions, talk, give them a chance to express their own ideas, and more or less try to cultivate the individual by educating and protecting him.

The decisionmaking competency on the part of an individual certainly is no exception to this rule and by that, I mean, as you listen to me, you are going to hear me talk about decisionmaking and how important it is to an individual.

Decisionmaking has no exception. If we want to develop competency in this area of learning, experience must be provided. This takes place with all psychological processes. In other words, you have to experience the best teacher's experience so that, without really having a child experience drugs, we do try to bring in all of the detail information, the data, that we possibly can muster up and expose the child to it so he can experience drugs through reading and educating him to the drugs.

Decisionmaking by man represents the most critical and fundamental process in all human behavior. It is the simple vehicle, the one simple vehicle alone by which man incites and directs all psychological locomotion within his life space. It is the nucleas from which all personal satisfaction or disappointment, all success or failure and, indeed, where the determination of good or poor health for every individual is determined.

And we tend to say an individual has poor health if his behavior is maladjusted. I would say that if you ran some type of study on this, you would say that 90 percent of the kids living in the ghetto have maladjusted behavior according to the standards of society, and so this is what we want to correct.

We also feel that Concerned Athletes in Action can curtail crime and delinquency through decisionmaking. Crime and delinquency, abuse and illegal use of dangerous drugs, truancy, all of the typical and atypical behavior of man are products of his own personal decisionmaking. So if we can get children to make the proper decisions, that in itself is a step forward and we will them on the right road to a successful life.

You might say improved decisionmaking is essential for crime reduction. It follows logically that all maladjusted behavior represents a product of decisionmaking. In order to reduce maladjusted behavior, some changes in personal decisionmaking must be brought about for persons involved typically in crime and deliquency in correction programs fail to do the things they are supposed to do. I am going to point that out to you in a minute.

Crime and delinquency programs fail to deal with, even in the slightest manner, the fundamental truth that learning arithmetic or development of a job skill would serve to alter their choices in relation to crime and delinquency and that changing their decisionmaking would stop the crime and delinquency.

The principal concern of most correctional programs deals with the following: (1) Custody; (2) Control; (3) Education; (4) Development; and (5) Self. And not one of the five major concerns serves to deal directly with the real cause of delinquency or crime and that is the decisionmaking. I repeat, the real cause is decisionmaking.

I honestly feel it is because the decision comes from within the individual—for a variety of reasons—that he is typically involved in crime.

We as concerned individuals feel that our theory will be accepted by the children or youth of our society. Since youth and young adults are generally attracted to athletes, the primary intent of Concerned Athletes in Action shall be to create the athletically involved mechanism which will provide the participants an opportunity to engage in rewarding and enjoyable use of their time, utilizing, at the same time, the assistance of professional athletes as image builders for the youths.

The Concerned Athletes in Action shall focus on combatting drug abuse and juvenile delinquency. The same vehicle will also endeavor to provide educational activities and generally aid in motivating and directing the young into education and vocational classes and thus demonstrating to the youths and young adults there are other avenues to success. And that athletics is but one means to a meaningful end, while education and skill remain the true basis for success in our society.

I would like to quote one more thing to you before I sum it up here. This is something that I think Concerned Athletes believe in sincerely and honestly, you might say. Real learning takes place only when the learner plays a dual role; when is both learner, teacher, doer, and critic, listener and speaker. And the student who tries only to remember what is in books will not even succeed in doing that. The skillful learner talks to, even argues with, the book. He asks many questions and checks his understanding as he goes along. Your poor student never knows what part of the answer he understands or what he does not. He leaves it up to the teacher to find out.

Moreover, when a child gets little or no chance to talk, he does not get better at talking. Most of the fifth graders I have known were no more articulate than many of the 5 year-olds of comparable background. Many of them wer less so, even.

Now, this affected their work in English. The child who is not used to putting his thoughts into words will not be able to put it down into writing but there is still a more important reason for having the teacher talk less and letting the children talk more. A child comes to school with thoughts, ideas, curiosity, wonders, but he soon finds out that nobody is interested in what he knows, what he is curious about, what he cares about, and he feels school is not a place for him. He asks questions, shares his concerns, satisfies his curiosity, but before long he comes to doubt the worth of his own thoughts. He begins to feel like the teacher, and that is that things that worry or please him, or that he needs to find out about are unimportant, a waste of time. So he does not develop a sense of his own identity or worth. He does not think of himself as a unique, evaluative person with ideas to present or share with, and interests and skills.

He could find joy in pursuing education and developing but he comes in instead to find he can find satisfaction in life only by pleasing the authorities or the crowds. He loses his taste for independence or freedom and is ready to follow anyone or any group that will make him feel like he is somebody instead of nobody.

This is what we are trying to do; make children feel like they are somebody by going to the playground, sitting down in rap sessions with them, talking about drugs with them, finding their interests and finding out about their curiosities because we care. We are concerned athletes in action and want to save the children.

Mr. JONES. I would like to expound on how we work. We have on our staff junior ballplayers that travel with our staff. What we do is we have the older kids teaching the younger kids about drug abuse. We give them a chance to let them respond to younger kids.

Now, we don't always tell kids about drugs. We have younger kids educating other kids. We have high school kids educating other children.

And during the winter I lectured at the Students Service Board down at Morehouse at Landum University.

We are talking about drugs in all of the black colleges where drugs have become predominant. They had two killings in Central State.

They had a killing at Lincoln University, all in relation to drugs. This is not only athletes taking drugs but I am talking about drugs in general. It occurred in a college where an athlete was selling drugs. This is where we want to get down to educating in those places where people are not aware of the drug abuse.

We feel it is imperative to get at all of these levels where we can actually show these dangers of drugs—and not just the high school and college level—and that is why we want to educate staffs in colleges, high schools, and the elementary level to help them talk to the younger people from ages of 5 on up.

Mr. Dyer.

Mr. DYER. My name is Michael Dyer and within my community I am called "Maki."

I am originally from Topeka, Kans., which is about 60 miles west of Kansas City, the capital, and it is about 150,000 population. I am the second of seven children and I came to Milwaukee some 5 years ago and only as of about a year and one-half ago had I the opportunity to meet Wali Jones, and about 4 and one-half years ago I had the opportunity to meet Harold Nelson.

The merging of our minds has brought about the creation of our organization, the Concerned Athletes in Action. I received my masters degree in educational psychology and I am a prospective doctoral candidate under Dr. Cassel.

I would like to think that I am a humanistic psychologist. I feel I am more than just an educational psychologist.

At our marathon game I had the opportunity to speak with a young athlete. He must have been about 14 years old. He spent the full 40 hours at the center. He had to go home for about 10 minutes to get a permit slip because there was an 11 o'clock curfew in the city. He came back and he slept on a mattress that was on the floor and he got up periodically to play.

During this time we sat and we rapped and he wrote a poem. And I would like to read the poem to the members of the Senate this morning.

"Friends, humans, countrymen, lend me your ears.
Friends, humans, countrymen, lend me your ears.
Friends, humans, countrymen, lend me your ears.
There be a new tale from the ghetto; I want you to hear.

"The whole world is a ghetto for you and for me
  Except I be trapped inside, for your minds to research me.
Our young cry out, live, be humane,
  Only laughter comes back and whispers, 'They are insane.'
Their thoughts to you I will now transfer
  In words of notation in the language that you prefer.

"Little child running wild, little child running wild;
  I see that your frustrated face never smiles.
I see your brothers as you pace the filthy streets,
  Like the animals wild in search of meat, knowing that it is higher than the dope in the streets.

"A child of nine with the mind of a man
  Who has never known the word 'Fairyland'?
A child who is to the drug scene chained has no time to play.
  There is a habit to maintain, to maintain, to maintain.

"Little child running wild, little child running wild;
I see that your frustrated face never smiles.
Always down, always mad,
Always thinking that you have been had.
In the back of your mind, you say I didn't have to be here,
As you search the ghetto streets full of tears, full of tears.

"Little child running wild, little child running wild;
You have no reason to smile; you have no reason to smile.
Hey, little sister, where is your brother?
See your mother standing on the soup line?
Our Blessed Father ain't got no strength to be bothered.

"Come on, people, we can have hope
If we quit shooting up this dope.
You say if only you were a child again;
I could never want to venture life like this again.

"People of the world throwing sticks and stones;
So afraid someone is going to come up and break my bones.
Because we are confined by economic and geoligical boundaries
Doesn't mean we have to get high and work in foundries.
Lots of greed, lots of temptation;
Children learning by imitating.

"So open up your minds and concentrate, concentrate, concentrate.
No longer can we, can we, afford to procrastinate.
Time is passing, life is changing, people growing older;
Folks must love and trust, hand-in-hand, shoulder-to-shoulder.
We must come closer to the essence of life,
But be aware that it takes courage and strife.

"People, the time has come throughout this Land
When the lion must lay down with the lamb.
Open up your minds and concentrate, concentrate.
No longer, no longer tell me, procrastinate.

"So meditate, meditate. Let's concentrate, concentrate, concentrate for the Creator has a master plan;
Peace and happiness for every man.
The Creator has a master plan,
Peace and happiness throughout our blood-stained Land."

And these are just the thoughts of a young 14-year-old who they say can't read. He is functioning at about a third-grade level. They say he can't write. They say the only thing that he can do in life is play basketball and get high and smoke dope and chase women. But that is life in the ghetto.

Humanism, that is what I think we are all about if we are really real; if we can feel the realness in life.

And what is humanistic psychology and what part does it play in our life, and what part does it play in the lives of the Concerned Athletes in Action? Love plays an important role in humanistic psychology for the pressures of all human relationships involve love.

Dr. Abraham Maylow is from Lippstadt, Germany, and he and Dr. Cassel are my tutors in humanistic psychology.

But love knowledge, if I may call it that, has other advantages as well. Love for a person permits him to unfold, to open up, to drop his defenses, to let him be naked not only physically, but psychologically, and spiritually as well. In a word, it lets him be—instead of hiding himself. I think that is what we are all about; dropping these defenses that we have.

Men have defenses against each other because they fear each other. You may fear what I am thinking about you and I may fear what you are thinking about me. But these are some things that in humanism we deal with. We should be dropping them by feeling and by vibrating with each other and by you being a part of me and letting me be a part of you, letting my spirit transfer to you and your spirit transfer to me; being human shoulder-to-shoulder. Like the young man in the poem, we must be human to overcome our problems in the ghetto.

The young man also says, are we homosapiens or aposapiens? And I said, aposapiens? And he said, "Yeah, look around us; we live on the planet of the apes. We are contained in economic and geographic boundaries." He said, "I can't go anywhere."

I mean, we have people in our ghettos that never traveled more than a 4-block square area. They had never been downtown. They don't know what downtown is like. And you say, oh, well, this is not real. But this is part of our existence.

Let me go further and explain a little more about Dr. Maylor and Dr. Cassel, and what they have to say about humanistic society. The individual would tend to have deep and intimate relations with only a few highly selected friends and to these few he gives absolutely; and he expects precisely the same in return.

Here the sexual involvement is not pertinent and may or may not be present, depending upon other factors.

[Short pause.]

Mr. DYER. I have been having some dizzy feelings lately. Excuse me.

Mr. NELSON. Stay cool.

Mr. DYER. I am cool. I am cool. I have things to say.

Here the sexual involvement is not pertinent and may or may not be present, depending on other factors. Love to the humanistic psychologist means more than relations with people for it deals with love for the activity or the experience.

But just as love can cause one to eliminate his own ego defenses, so it can also cause him to be blind. And we are all victims of love in one form or another. This is humanism. This is reflecting. This is being friends. This is being associates. This is being concerned. This is being Concerned Athletes in Action. This is what we are all about.

The athlete is a leading figure in his environment. As you know, an athlete is only an athlete, though, for a very small portion of his time; precisely 3 hours a day. This is when he is relieved from his classroom schedule and he goes out to the court and participates, maybe on Wednesday, Thursday, Saturday night, when he has a game. Otherwise he is a member of his community; he is a member of his society.

This is where the drug problem that affects the high school, college, the elementary level, and even the professional ranks, comes in because he must associate, and he must continue to associate, with people in his environment. And what is his environment? If you are from the culture of poverty, in which we are from, drugs are everywhere. A young sister was talking to me the other day and she said, like, well, I would like to get away from drugs but drugs are everywhere. She said. I can't turn anywhere without somebody saying, here is Bennie, here is some coke: here, snort some coke. Here is some smack, and let's get high.

She says, so what do you do? You know, here is where peer group pressure comes in. You got to be accepted. All of us know how important it is in your life and in your profession. You want to feel you can groove with everybody around you. You want to feel you can get along because we all want to promote ourselves. So we all project ourselves and we wear many masks. Every day we wear different masks.

You wear a mask all through your life. One minute you are a father and the next minute you are the boss and the mask you wear is tough and hard, and the next minute you are the lover, and the next minute you may be the concerned friend.

These are certain things that the young people are having trouble with, with drugs, because they can't fluctuate from one system to another system effectively. They can't handle these masks.

So what do they do? At a young age they understand what depression is. What do they do? They remain high. They shoot drugs into their veins. Now, basketball is our national game. Let me tell you, basketbail is the black national game, mainly because of the equipment that is needed, which is one ball, and the many participants that can be involved.

Like you have one ball and 20 or 30 guys can play. You know, 10 can play now and then five more come up and you keep rotating like this. Also, it is usually available because all of the playgrounds in our communities are asphalt, are concrete. So all you do is sweep away the broken glass and there you go.

And another thing, the ghettos, the kids in the ghettos don't have any nights. They don't know what nights are. They just sit out there all night. And you can say it is fortunate or unfortunate, but the city has provided lighting so they can stay there all evening and into the next morning just shooting basketball and playing.

In our community, also, we have these new-type of lighting, these fluorescent lightings. The kids can't sleep. They look around and it is as bright as day. As a matter of fact, it is brighter than day in some places. So at 4 o'clock in the morning, kids are just running around. You know, like when do they sleep? I know this because my environment was the same when I was growing.

And I remember I didn't have a male model in the home. This is very important in our community because we don't have male models. Most of them are in prisons. Most of them are strung out on dope. Most of theme were in the war. We have an extremely high death rate of black males. Consequently, it causes confusion if you have police harassment. So we have confusion and no direction and no organization.

You know, like you may have had a father over you, and giving you guidance through your lifetime and giving you direction through your lifetime and telling you, OK, you are 6 years old now and now is the time for you to start being what you want to be, whether it is a lawyer, doctor, architect. What do you want to be? Let's start preparing you now. But most black kids don't come out of their educational retardation until they are about 35. These are men and not kids, but they have the minds of children because of the incarceration which has been worked on them; the mental incarceration.

So there are no male models. This is what the Concerned Athletes in Action is concerned about; presenting male models in relationship to the national game, which is basketball. And we have been extremely effective.

Wali didn't mention it but we also had a parade, which was before the marathon began. And, like, we had a unit in the city called the Commandos, which most people think would have negative connotations but these men are interested in saving the children. We had one Girl Scout group and about five or six of us who started out and we marched all through the ghetto and, like, we had cars, we had loud speakers. We had just two or three cars. We marched through the city and brought the people out and when we ended up we must have had 30 or 40 cars and about 150 bicycles. We had mothers and children, and others all coming out and walking with us and talking with us, all of the way through the ghetto and we ended up at the Boys' Club, in which we held our marathon.

And so this is what we are all about. The community is concerned because our young people are dying. We also have problems in combating the movie industry and mesmerization. What they do is throw models upon the movie screen for the young people to emulate; people shooting dope, snorting coke, brothers fighting sisters, and husbands beating wives. And we learn by imitating, you know. And the kids say, wow, this is cool so we will do this, and it is cool to dress like this, and it is cool to be like this because they are putting it in front of me and that is really hip, because that is the way you get over, the way you succeed. And all you are doing is perpetuating the system and it is killing us. The almighty dollar is killing us.

Now, alternatives. What kind of alternative? I was sitting back here earlier and I was thinking, you know, you were talking about alternatives and what can people do if they are human and homosapiens and not aposapiens. What can they do about this? Be gladiators in the pits—and I am referring to the professional basketball players and the professional football players and the olympians and the trackmen—want to come back into their communities, they want to unite in a mass effort to control this problem. Now, there is no money. The Federal Government cut back in spending.

I was listening to you talk about that earlier and the cutting back of the NCC programs. The young people don't have jobs. They are standing around this summer. The price of meat is higher than the dope in the streets. It is easier to get dope.

Mr. JONES. Very true.

Mr. DYER. Yes; it is easier to get dope. So what are they doing? They are saying, hey, man, let's mainline this because, hell, we can't go nowhere; we have nowhere to go. You know, we don't have any job. So let's go break in over here so we can get something to support and maintain this habit.

They are doing this because somebody somewhere wants to make some money. Somebody somewhere wants to make a lot of money.

And, like, you know, it has to be stopped if we are human beings.

I mean, we got to put forth effort. Concerned Athletes in Action have a project which can do it. We can put together, and have put together, and have demonstrated in our second year operation that we can help control this problem. If you are interested and if you are human and if you are concerned—just as you believe that you could be a lawyer when you were coming up, or you could be that doctor when you were coming up—we believe in saving our children and saving their lives from the killer, the drugs, because we love them and because we want a future generation to be here. You know, like, as you save your children, we want to save our children.

Senator BAYH. One of the things, if I might interrupt?

Mr. DYER. Yes.

Senator BAYH. One of the things I have been very impressed with is your insight of the problem. I can read about that and the public generally can say they understand the problem, but I don't think anybody really can understand it unless they have been there. You gentlemen have been there and I think you have done a very significant job in articulating it.

Our contribution, it seems, as those who haven't really been there but would like to help those who still are there, will be to take whatever steps we can to remove the incentive which might be there to cause young people to take drugs and to remove the symbols of adulation in the communities you describe and the pressures, and remove the temptations that might cause them to resort to drugs, either through coercion or through their own volition and to take away that temptation through either education or penalty.

Now, that is why we are here. You know, I could sit and listen to your experience all day, and I would like to hear it, but you know it is better to see than to hear, although you described it very graphically.

Now tell us, any of you who have had experience, personal experience in this, and I suppose Mr. Jones may come closer than you other gentlemen to this actually—what are the temptations that are imposed on an athlete, who is a symbol of success in his community, to utilize some of these substances to then become part of the street scene, which destroys the soul and ability to respond and to be human and capable of responding. What are the temptations you have witnessed and what are the practices you have witnessed?

Can you give us some specific examples of physicians or trainers or owners or fellow teammates who have said, come on, Wali, if you don't do it we are going to lose.

What are the pressures in your own mind or in the minds of some of your teammates in thinking, well, I am not going to be the kind of person people are going to look up to, or I am going to be dropped from the team if I can't score those extra points or run that extra mile?

What are those pressures?

Mr. JONES. I know for sure that it is not the specific action of another to fortify me to play better. There has never been any time where an athlete has said, you have to do this or do this for a run because, you know, we as professional athletes know our conditioning especially since we have been playing for many years. And this has never occurred since I have worked in the grass roots areas.

Of course, there has been speculation because I hung around with street people that I was involved with drugs too. People called my wife up and they told her I was in a sanitarium shooting drugs. So I know the pressures on the athletes and the pressures on the people on the streets, because I am also working in the community.

There are speculations you are in drugs too when people come up and say, hey, you can get down with us, you are still from the streets.

So there are these pressures.

Senator BAYH. Well, the kind of pressure that I am specifically concerned about—and in trying to articulate these concerns I don't want in any way to give you or anybody else the impression that I am not equally concerned about those pressures that exist on the street—but my immediate mission right now as chairman of this subcommittee is to find out if there are pressures that are put upon you who are professional athletes to use substances, to be shot, to be manipulated in such a way that you indeed do use or are forced to use or voluntarily use synthetic substances whether it be amphetamines or steroids or other kinds of substances to increase your athletic prowess.

Have you been subject to this kind of pressure in your professional career?

Mr. JONES. No, I haven't.

Senator BAYH. Or in your amateur career?

Mr. JONES. No, I haven't, but when I first started playing, I saw a lot of the older ball players that had been playing with me for several years taking pills because they were just fatigued.

Senator BAYH. What kind of pills were they?

Mr. JONES. They were probably speed, to speed them up. I never used it. But I would just see—and I was still young when I first came in—and I would see them taking it and the guy would say, here is some speed. I mean, these guys couldn't really go for two or three nights because they were just old and fatigued. I noticed they didn't play any different though.

Senator BAYH. Pardon?

Mr. JONES. They didn't play any different. This was just psychological for the older ones.

So there has never been any pressure on me except on my playing when I was injured that time.

There is the indirect pressure of saying w need you and the team wants you, so under the circumstances do you think you are able to play?

There were pressures about being shot. I know athletes who were shot in their knees to play in playoff games and almost were crippled. But that is still on the individual. He doesn't have to have a shot. But these are the pressures that athletes go through because they're trying to keep their position or trying to keep up their whole id, their whole I, the whole individual effort in trying to still be the superstar. And there are superstars that don't have to do this because they get some rest. But there is the career man who, if he is injured, somebody will take his place and he will lose his job. So there are pressures that you don't see all of the time. There are pressures on athletes who are just barely making it. They have to play while they are injured and have to play shot up. These are the pressures that are not always seen.

Senator BAYH. What sort of advice could you give me, as a member of the Senate and as somebody who has been trying to limit the access to amphetamines and barbiturates—the uppers and downers—and get out of this artificial culture at the street level and stop it. Someone who is trying to say to the big drug producers, we are not going to let you go ahead with unlimited production because this poison gets out on the streets eventually, so what advice could you give me?

Are there laws or regulations or standards we should require of professional athletes or managers or owners that would lessen the pressure?

Mr. JONES. I have a suggestion, and that is, we talk about drugs coming into all of our ports, and I asked a kid 10 years old, where did the drugs come from, and he said, hell, they come in from another country. So these are always in our midst. They are always accessible. As Maki said, drugs cost less than meat now.

And what we say is, there has to be some type of control because in our areas that I have worked in and lived in the same thing is true—and he comes from Kansas and I come from Philly, but we are all experiencing the same thing. And we sit down and rap with brothers from all over the country and they are all experiencing the same thing in all areas. There is a complete genocide of people going on and there has to be some control. There has to be control on the ports. There has to be control on the access to pills and access to cough syrup in pharmaceutical stores and the access to drugs.

I mean, our whole culture is drug-oriented. Television says to take a glass of something to go to sleep or just take a pill. They are orienting the whole Nation to do everything on the basis of, let's take something to relieve this situation instead of using their mental capacities.

Senator BAYH. I have sat here hour after hour and listened to certain government officials say my suggestion to limit amphetamines sounded good but didn't make sense, and that you couldn't limit the production of amphetamines because, et cetera, et cetera, et cetera. Well, we did cut back production 80 percent.

You know, this is what we have been trying to do now in the same area with barbiturates and sopors and methaqualone. Are there things that we should give our attention to in the area of sporting activities whether it is amateur or professional? I don't think any of us can wave a magic wand, you know, but we can do our own particular thing to help.

Are there regulations or actions that we should give our attention to in this area? I am a second-rate amateur. At least I was several years ago, or maybe even a third-rate, but I love sports and hate to see this area, which has in the past, and I like to think today, symbolized excellence and accomplishment on your own capacity without having some sort of pill to prop you up, and I hate to see this change.

Are there things we need to do to guarantee that this continues to be the standard we strive for?

Mr. Dyer. I would like to answer the question. Yes, there is something we can do. I was ready to propose this.

Our objective is to universally set up counseling, drug education and prevention, recreational centers throughout the country and by this we will improve decisionmaking. Even if you cut back on amphetamines and barbiturates you still have this problem out here. So we say, we can't stop the source of it, in here, and it is going to be here, but we can improve the decisionmaking of the people involved. We can set up centers which young people can come into that are open 24 hours a day in which they can have recreational activities, in which they can be counseled in relationship to drugs, and where they can have a drug prevention program and an educational program enlightening them about what they are taking.

You see, in the ghetto if they hear about some drugs that they don't know about, they're just going to pop it in their mouth or shoot it in their veins because they say, you can get high. And what we want to do is universally set up centers to combat this.

Right now, I would like to turn it over to a very good friend of mine. Dr. Russell Cassel, one of the most prominent psychologists in the field of drug education. He is a retired colonel from the Air Force Academy, a graduate of the Rocharks Institute. He has published over nine books. He has had over 13 tests which are in operation or were at one time in operation. He has published over 300 articles in relationship to drugs, and counseling, which we will have at our center.

Right now I would like to turn it over to a very good friend of mine and my major professor in my studies, Dr. Russell Cassel.

Dr. Cassel. Thank you, Maki.

I am Professor Russell Cassel from the University of Wisconsin. I was born in Harrisburg, Pa., 61 years ago. I spent 15 years and 5 in each of the wars involuntarily and retired from the California school system.

I am better known as the editor of Mr. Education, which has Sid Marland's picture, or as the editor of College Students' Journal, and the lead article is about Elliott Richardson and the second article is about Senator Jackson of your own group, and the third article is about President Weaver, from the university system, and the fourth item is a Nobel Prize winner, about a Nobel Prize winner in this issue just released yesterday.

But I am a fellow of the American Psychological Association. I am the only diplomat in the school psychology area that the University of Milwaukee has ever had.

So I guess I would rather talk as a psychologist. As a psychologist, I can say there is something I think you can't capture up here in the Senate halls, that I want to bring out. Yesterday noon when I learned that we were coming here instead of the Gary, Ind. to meet your group, I called a full colonel——

Senator Bayh. Pardon me. And this is off the record.

[Discussion off the record.]

Senator Bayh. OK, you were saying.

Dr. Cassel. I called a friend, a full colonel friend of mine and told him I would be here and would like to meet with him because he is on a panel at the American Psychological Association and served with me on this panel on decisionmaking. I told him Wali Jones was coming with me.

He said, oh, no, not Wali Jones and Lucius Allen, the famous basketball players. I said, yes, they are involved in programs for the second year in the Milwaukee area and that was about all he said, but an hour later he called me back—and he has four children, the youngest one who is 17 and a senior in the high school in Washington here, and the other two are at Howard University and the fourth one is a senior at Oregon and three of these were at home—and when he called back he wanted to meet Wali Jones and Lucius Allen, and his son was determined that he was going to come down here and meet these people.

So I told him if he wanted to meet us and take us to the hotel, there were five of us, and how he could get his four kids and himself and the five of us in his car I didn't know how, but we would negotiate that when the time came.

So, this gives you the kind of the feel of the kind of reception that these people get. I came to Milwaukee 7 years ago. I came from Liberia where my two last children where born.

They are the only two white children in an all black school. I have lived here for 7 years. And you need to know the kind of life that goes on in the alleys, up and down the street, with basketball and so on. Yesterday my 7 year old came in and said his ball was punctured by the big boys who were using it. And these basketball games go on until late at night which I see in the alleys just outside of our home.

And in that block there are two medical doctors and two lawyers. My home is a five-bedroom brick house that would sell for $65,000 anywhere near the college. Well, that is the kind of home that I'm talking about.

Now, when we talk about the American Psychological Association, we are talking about many different kinds of specialists. Indeed, up until 1969 there were 28 different kinds of specialists. Today there are 33. Each new year in the last 4 years, a new specialty has been added. The specialty that I'm talking about here is the 32d one, which is humanistic psychology. The reason I talk about this is because each one of these four major people in the athletes for action program, concerned athletes for action, are athletes in their own right and every one of these boys has been an outstanding athlete. Each one of them has played a role in coaching and every one of them now are concerned with going beyond that into helping relations, helping these kids.

Now, humanistic psychology is a very efficient way of teaching because it treats an individual as if he were a human being and when he comes into the athletic situation, each one of them must do something to improve himself. There must be some intrinsic value in everything he does and not extrinsic, that is, not something he is loading on, not some information loaded onto him. There must be personal development.

In the 38 years I have been working with the schools I have found that people that come from the athletic areas know how to treat these humans in a personal way by not loading information on them, but giving them something that helps them better to make decisions. I think Hal and Machai here are a natural for this because of their way of working with children, and they were involved in these helping relationships in the kind of program that they were involved with last year in Milwaukee.

And I witnessed these programs. They have had more attention and brought more attention for our university through the mass media communication than any other program we have had there, and I am proud to be a part of it again this year.

It seems to me my job and the job of the university is to give them resource background so that they have some depth with which to deal with these kinds of problems. I think it is not just idle words when Howard says that the problem in drug abuse is a bad decision on the part of the abuser.

The only way you are going to change drug abuse or delinquency or any other behavior in man is to change something inside of the man and this is the kind of thing these people are doing.

Now, they need help. For example, Howard had a videotape all year as a counselor in the Milwaukee schools, but that was taken away from him because he is going out of the district and school property can't be taken out of the district. Now, they have a whole series of tapes that make a 10- or 15-minute presentation of some technical area. And then they relate to the kids, and they relate to the people, with this as a basic background.

There are samples of actual game playing and simulation in which they play roles in which they are confronted with drugs. They play roles in which they confront other people with all types of different situations involving drugs where they live through these experiences.

This helps the children become aware of the situations. I have been a pilot for many years, and I think you know a 747 pilot, when he sits in front of the cockpit for the first time, he really has never flown an airplane until he flies the 747 because it is a transition type flying, but he takes off with all the competence that a mature pilot does. He has learned through simulation, and the same thing is true of the big tankers. And I think that is the kind of program these boys have brought to our youth. They have done it last year, and I think they will do it again this year.

Senator BAYH. Well, thank you Doctor, and all of you gentlemen, for giving us an insight as to what some of these pressures and these facts on the street are that lead to the problems of drugs and compound the problem. My compliments for taking the bull by the horns and doing something about it.

Now, let me just throw one other question out, and then we are going to have to move on here unfortunately.

There would have to be enormous pressures on an athlete and I suppose the very spirit of competition is pressure. The question is, where do you go beyond the line where pressure is no longer wholesome and the desire to excel becomes really the willingness to resort to utilization of substances that the athlete might feel would help him excel but which are dangerous?

Tell us, are there any specific examples of this, whether it be high school, college, or at the university or professional athletic level?

Is there any thing that we can do from a legislative standpoint to alleviate or remove or to establish reasonable standards so pressure to excel will not lead to the utilization of some of these artificial substances that we call drugs and that really lead to the demise of the individual either permanently or at least lessen his or her efficiency as far as human beings are concerned, as well as being athletes.

Mr. JONES. I would like to say that I think the pressures are coming from, well, we are talking about the industry, and again the idea of athletes being pressurized.

I think it ceased to be a sport for fun any more, sometimes in professional ball. It ceased to be a sport any more in professional ball.

I think as an athlete myself, playing for 9 years and going through some pressures to participate under this, I think we need moneys to have guidance counselors fo rthe young people not only in the sports field—because as Machai said the sport life only lasts for 3 hours—but we must project their energies into education and we feel that our drug and recreation centers could be an important part in this. We must educate people in what nobody knew yesterday and prepare people in our schools for what no one knows yet, but what some people must know tomorrow.

We must prepare them.

Senator BAYH. That makes sense to me, and it just doesn't make sense that there are people in public areas of responsibility who feel that you might be able to save a dollar a day by cutting some of these programs, yet you would be denying young people programs that could save lives tomorrow.

Mr. DYER. Senator, before we close, we passed out a letter about this and we do accept contributions so we do encourage you to make, if you can, to pass legislation to encourage your friends, or people that you know to support us in our plan to save our children in all of the ghettos in America because we are all about saving the children.

Senator BAYH. I can't think of a more important goal than saving those young lives that are otherwise going to be lost, and appreciate you gentlemen contributing to our study today here.

[Mr. Jones' prepared statement is as follow:]

PREPARED STATEMENT OF WALI JONES ON BEHALF OF CONCERNED ATHLETES IN ACTION AGAINST DRUG ABUSE

Dear:

We the Concerned Athletes In Action is a nation-wide group of NBA and NFL active and non-active professionals. We have dedicated ourselves to the youth in our society and to th[illegible]ver-increasing problem of drug abuse. Our concern is especially centered around the environment of the underprivileged youth who can least afford to attend a boarding camp and who are most susceptible to exposure to the evils of drug abuse.

Our goals for the 1973 fiscal year are to take the less fortunate youth out of his environment and provide a week of schooling and activity which will not soon be forgotten.

Recent endeavors of the group included a series of playground based clinics of basketball and drug abuse education. The clinics were put on throughout the summer of 1972 in the Milwaukee area. The positive reaction we received from the youths and the concerned public drove us to go on this year. Operating on a larger scale, we hope that children who were not able to participate last year will have a chance this summer.

This year, the Concerned Athletes will depart from the playground concept, and will provide a series of fourteen boarding camps which will each house 150 of the states underprivileged youths for six days. They will be provided with meals, a physical exam and all instructional and recreational activities at no charge.

The staff includes the NBA and NFL ballplayers, a doctor, drug experts, ex-addicts, and teachers and coaches well versed in leading camp activities.

Recent studies have shown that most drug abuse programs have not been successful do to a lack of support and interest, on the part of the public. Our organization has done extensive study in trying to find the right solution to combat this killer-drug abuse.

We now ask for your support in an effort to clean up our Wisconsin streets. Rather than request a specific amount, we ask only that your organization give what your office is able.

We open ourselves to you for discussion and will furnish necessary documentation upon request. It is hoped that you will avail yourself of this opportunity.

Please, find the means and the time to participate in this most worthwhile effort. Thank you for your consideration.

Senator BAYH. Our last witness this morning is Dr. Lawrence Golding from Kent State University.

Doctor, thank you for joining us here this morning and this afternoon.

STATEMENT OF LAWRENCE A. GOLDING, PH. D., KENT STATE UNIVERSITY

Dr. GOLDING. Thank you. I prepared a 2-page summary of some of the research that has been done on amphetamines and anabolic steroids and I think if I read it, that might be a starting point to ask some questions.

Amphetamine and anabolic steroids appear to be two of the drugs most commonly taken by modern athletes.

Amphetamine and its effect on athletic performance has been studied and the research indicates that the amphetamines do not increase or improve physical performance. Since amphetamine increases the heart rate and blood pressure, it may also add an additional stress on the strenuously exercising athlete. In a carefully controlled, double blind study at Kent State University with both athletes and nonathletes, in both rested and fatigued conditions, amphetamine did not improve physical performance.

The use of amphetamine is so widespread that athletes tend to ignore any contraindications. They are aware that large doses of amphetamine are administered to psychiatric patients with no apparent toxic effect. They lose sight of the fact that abnormally high doses are administered under very stringent medical supervision.

Agencies that control athletics are not concerned about the use of vitamins or other nutritional supplements, but they have become very concerned about the use of drugs. This concern and attempted control by authorities tends to make the athletes believe that there must be a definite advantage to the use of these drugs to merit the controversy that their use generates. As the bodies that control athletics become more certain that drugs must affect performance advantageously.

The athlete on amphetamine becomes keyed up for his event, which is desirable for optimal performance. He is mentally alert and, when observed objectively, appears to be emotionally ready to perform maximally. Mental attitude certainly can affect performance, and being mentally prepared for an activity or an event is desirable. The increased psychological preparedness appears to be the only rational reason for the continued use of amphetamine.

ANDROGENIC-ANABOLIC STEROIDS

Most users of steroids feel that beneficial effects in strength occur only when accompanied by heavy workouts—usually weight training, which tends to complicate findings, since this increase in training may account for some observed strength gains.

It is apparent that the use of anabolic steroids is extremely common, especially among weight men. Individuals are naive to believe that athletes would not resort to these measures in their search for excellence. We are living in a drug culture and the sporting world is not immune. Drug taking is not considered immoral, unsportsmanlike, or dangerous by youth. Drug procurement is apparently easy, and athletes desiring drugs have little difficulty obtaining them. Many athletes admit that physicians supply them with anabolic steroids and, although they recommended normal dosages, they do little to prevent the individual from increasing the dosage at will.

The medical literature indicating possible liver impairment with the use of anabolic steroids further concerns athletes, trainers, coaches, and team physicians. Finally, ethical and legal considerations make the problem of anabolic steroids use one with impossible dimensions.

Four major investigations report that anabolic steroids do not help weight and strength development and indicate that the anabolic steroids have no place in athletics. They point out that weight gain may possibly be fat accumulation or water retention, and not lean muscle mass. Six other, now eight, equally well designed studies report significant improvements in weight, strength, and muscle size. The studies report no significant side effects of drug therapy and suggest that gains occur when the strength workouts are near maximum and when accompanied by a high-protein diet.

The predominant attitude among authorities is that the solution to drug use by athletes is through understanding and education. However, the overly strong views of the establishment make it difficult for athletes to admit to the use of drugs. Too often the coach, trainer, or team physician plays the role of a disciplinarian instead of an understanding counselor, which makes the hope for drug control through athlete cooperation almost impossible.

Senator BAYH. Well, what can we do about that?

Dr. GOLDING. Well, I am really only involved in the research side of it, and the studies investigating drugs. I think in the studies on amphetamines, there is no question, in my mind and I know in some of the other people's minds, that amphetamines do not heighten physical performance, yet in personal surveys with athletes, amphetamines are probably the most prevalent drug used.

As I indicated, the only reason I can see for taking amphetamine is the idea the athlete feels he must be up for a certain task. Since it is a psychostimulant, he takes it, to make sure he isn't down when he gets ready for a performance.

The fact that amphetamine doesn't help performance makes education a possibility. I think, on the other hand, with anabolic steroids, the majority of studies show strength improvement—and unfortunately the controlling agencies too often are anxious to get their point across that anabolic steroids don't help, and even the research that is done, they tend to knock it and say the research is not controlled, but there are well-developed, controlled studies that have shown, so far, that anabolic steroids do increase strength and weight, and therefore, people interested in strength and weight are going to take them.

They are not taking them in lieu of hard work either. They are hard working athletes that are looking for the edge that is going to lead to winning. These people that are very well trained athletes and they will go on something like an anabolic steroid to give him that winning edge over his opponent.

Dr. Hagerman and myself did a personal survey and talked to a great number of really champion athletes; international and national-level athletes. It is difficult to comprehend bodies like NCAA saying they are not being used, or top athletes don't use them, because they do use them. I would say all top weight men are probably on anabolic steroids. You can't find out if they are on them through urinalysis because they stop taking them several weeks before competition.

I think we have to look for an educational program showing just exactly how much, if there is a gain in strength and weight, can be gained from the anabolic steroids, and more importantly, what some of the side effects are.

Senator BAYH. What are the side effects?

Dr. GOLDING. If you look at the PDR, you will find a list of side effects that are almost as scary as if you had looked at the aspirin side effects. In other words, they list a great number of side effects all the way from liver damage to possibly, cancer of the prostate and some very serious side effects, and among the sporting world there has been propagated a story that the testosterone will cause testicle atrophy and you will lose your hair and lose all sex drive. Unfortunately, with this kind of story going around and then when you interview athletes, they are aware of who is taking them and they see these things are not happening to those people so they are aware of the fact that this is probably more of a scare campaign than anything else.

You heard a witness here today say that when they found one man on drugs, they kicked him off the team. You are not going to get much cooperation and understanding with discipline involved like that.

They did a survey with athletes, and they were very, very cautious to talk to you about it until they found out you were not a coach and were not any authority body but you were doing it for research purposes, and then they were very willing to tell you about it.

We don't think of taking these substances in the same light as street addicts taking drugs. They feel they are only taking it in search of excellence. And as long as there is a possibility this might make them perform better, they are going to try it.

And I don't know what the answer is. We are presently doing a study at Kent on the use of anabolic steroids. Like all studies that come late, we have the benefit of all of the other studies so we have designed a study that I hope will answer many of the questions that other studies have not.

We have control groups and we have placebo groups. We do have quality controls necessary to give us the answers.

Senator **Bayh.** What data is available on anabolic steroids and their possible addiction? Can one become addicted?

Dr. **Golding.** No, it is not an addicting drug.

Senator **Bayh.** When the athlete who has taken steroids becomes a non-athlete from the standpoint of competition, in general what happens?

Dr. **Golding.** Well, I am talking now about the anabolic steroids. If they take anabolic steroids, usually they don't stay on the steroids. They are scared of them. If you talk to athletes, they are very sincerely interested in finding out something more about it. Usually, sometime prior to their competition they will go on for some time, short period of time, on anabolic steroids to bring out the maximum performance, and the most I ever heard of anyone being on them voluntarily is about 10 weeks prior to an event. They usually go on them something like 3 weeks on them and 1 week off, because somewhere along the line this has gotten out in the ranks of people who are taking them that this is the way to do it.

Senator **Bayh.** Are they taking steroids with counseling of the doctor?

Dr. **Golding.** Some of them are. As a matter of fact, most of them, when asked where they get their drugs from, respond that they get them from some physician; either a friend of somebody who has read the literature and says, "I can't see where it is going to do you any harm."

As I indicated, the only thing is that those same doctors, who might be given them one prescription for probably 100 tablets, may not realize the kid on his own may be taking triple the dosage. If one is good, three is three times as good; that kind of philosophy.

Now, there are a few who get them illegally, but by and large anabolic steroids are not a street drug and although the PDR says it does not increase performance, they put that in because they know that they have to put that in. The research on physical performance they have done really is almost nil, and I was disappointed when we applied to CIBA for help in our research that they refused to support us or even supply drugs for us in the study we are doing now.

So, CIBA is apparently really not interested in doing research on athletics and anabolic steroids.

Senator **Bayh.** Now, in your study in what sports do you find athletes using the anabolic steroids? You mentioned weight men. Would this apply to discus throwers and football players and so on?

Dr. **Golding.** When I said weight men, I really meant men interested in weight and strength. Obviously weight lifters, the body builders, the field events in track, certainly men in football, some wrestlers, especially your heavyweight wrestlers. The people who run long distances are really not interested in anabolic steroids because strength and size is not what the event demands. But in any event that demands size and strength, the athletes are possible candidates for taking anabolic steroids.

Senator BAYH. Is there any evidence of their use in baseball or basketball?

Dr. GOLDING. A little, yes.

Basically, though, you don't see very much of the anabolic steroids. You see more of amphetamines because this is a psychostimulant. I think it peps them up.

Senator BAYH. In your experience with amphetamines, you say there is no evidence at all to prove that they add to or increase the quality of performance of the athletes?

Dr. GOLDING. Right. I think Dr. Blyth earlier mentioned the one study, the Smith and Beecher study, which is the only study in the literature that indicated performance was helped, and that study was taken apart in the literature about not being well controlled. But all of the other studies have indicated they do not improve performance.

Senator BAYH. How prevalent is the use of amphetamines? Take the average athletic team, the professional and amateur; how prevalent?

Dr. GOLDING. I think there has to be a separation between high school and college at least. Most of the athletes that we have been interested in are champions. In other words, in Olympic or national level champions, I would say it it very widespread.

I know of at least three or four of those same athletes who have also written programs and written articles against anabolic steroids, but when it comes to their level to perform, they take them. And I think if this gets known—and it is known in circles of athletes who are on them and who are not; not officially but unofficially—and I think if this gets known it ruins their efforts. What probably ruins an educational program is when you hear somebody or see somebody write an article against anabolic steroids and know when it comes to final competition they will be probably on them.

I think it is naive to think that amphetamines and steroids are not being used. Anabolic steroids are not only being used but are being used by champion athletes who are interested in weight.

Senator BAYH. Now, Doctor, we are confusing amphetamines with steroids; aren't we?

Dr. GOLDING. Well, I was talking about both of them. I think amphetamines, on a personal survey basis, they are probably the most prevalent drug. I think very close behind it is the anabolic steroid.

Senator BAYH. But where you say you do have some data to substantiate increase in performance with the use of anabolic steroids——

Dr. GOLDING. Right.

Senator BAYH. But you have none as far as amphetamines are concerned?

Dr. GOLDING. Right.

Senator BAYH. Yet you say there is a greater degree of use of amphetamines than anabolic steroids?

Dr. GOLDING. Right. I can't explain it.

Senator BAYH. What do I, as a policymaker—well, how do I approach this problem? What do we do? What of the ethical question as well as the physical health question?

Dr. GOLDING. I think the amphetamines probably come closer to the so-called street drugs, and I guess must be handled like street drugs are.

Senator BAYH. Well, amphetamines are street drugs according to every report that I have had from any community that has a drug problem.

Dr. GOLDING. Right, yes. The athletes I talked to don't feel, when he is interviewed, that he is taking drugs for the same reason as the kid on the street. He feels quite strongly about this. He feels he is taking it for his performance and that is all. Maybe that is where the distinction is drawn.

Senator BAYH. Let me ask you this, you have interviewed athletes—and let's move to the amphetamines because I'm familiar with the street problem with amphetamines, with speed and the uppers, both by popping pills and shooting intravenously. You talked to athletes who tell you that they use amphetamines to increase and improve their athletic prowess. Have you dealt with the possibility that these athletes are also using amphetamines in a nonathletic related manner? Is it possible that they are used to using the substances, the amphetamines, to get up for a game and during the nonseason when he gets down for various personal reasons he will also resort to the amphetamines?

Dr. GOLDING. Right.

Senator BAYH. What has been your experience?

Dr. GOLDING. In talking to athletes there have been a number of them that admit they do take them out of season and when they are not getting ready for an event, since amphetamines are something they have to take almost directly before the event for its ultimate effect.

Yes, there have been quite a number who said they have taken them other times.

Senator BAYH. Do you have specific examples that you can inform us about that relate to the use of an athlete using amphetamines or steroids where the use has lead to physical injury of the user?

Dr. GOLDING. No.

Senator BAYH. You don't recommend the practice, do you?

Dr. GOLDING. No; not at all.

Senator BAYH. Do you have any suggestions for someone like myself who would like to get the facts out on the record, the facts about amphetamines where there is no direct relationship between the use of amphetamines and increased performance but there does appear to be a psychological type thing? One study I saw stated that two out of four athletes interviewed admitted they were using this in a nonathletic way, normally to keep them propped up to perform their daily tasks even when they weren't competing.

We have rather strong evidence from a number of doctors who have testified earlier in other hearings that we have held that amphetamine reliance can be very detrimental. So how do we get this message out?

Dr. GOLDING. I think, first of all, we haven't seen a lot of publicity on the studies that have been done on the amphetamines and, I have just recently seen some newspaper coverage of drugs and a little mention of the fact that there are controlled studies that have been done.

I think if athletes could know the results of the controlled research that shows that amphetamines do not help performance, and then with the addition of that to the education, the fact that there can be detrimental side effects, for example, it is interesting in many of the studies, on a treadmill study, for instance, we showed that although amphetamines didn't increase performance, it did increase heart rates and blood pressure after exercise and that is a detrimental effect. So, if they could be told not only will they not see an improvement in their performance, but actually there can be detrimental side effects, that might help.

As somebody mentioned this morning, it is very harmful for them to have heat stress, and if they could be told you could have circulatory collapse on amphetamines, if they could get across the fact that it is not going to help them perform, and hopefully they can be so "turned on" with their own athletic activity, that they won't need any amphetamines for an upper. Normally, we think of a highly competitive situation like the Olympics or any other type of meet, we think they should be so highly motivated that they should be up already and shouldn't need something to take them up emotionally. I don't know why anybody with the excitement of an event like that would have to have something to take them up further. I guess it comes back to education.

Senator BAYH. Well, thank you, Doctor. I appreciate your coming and taking the time to be with us.

I hope we can call on you as you go ahead with your study. If you have any other information you wish to include in the record, I hope you will let us have it so we can get all of the facts on the table.

[Dr. Golding's prepared statement is as follows:]

PREPARED STATEMENT OF LAWRENCE A. GOLDING, PH. D., KENT STATE UNIVERSITY

Amphetamine and anabolic steroids appear to be two of the drugs most commonly taken by modern athletes.

Amphetamine and its effect on athletic performance has been studied and the research indicates that the amphetamines do not increase or improve physical performance. Since amphetamine increases the heart rate and blood pressure, it may also add an additional stress on the strenuously exercising athlete. In a carefully controlled, double blind study at Kent State University with both athetes and non-athletes, in both rested and fatigued conditions, amphetamine did not improve physical performance.

The use of amphetamine is so widespread that athletes tend to ignore any contraindications. They are aware that large doses of amphetamine are administered to psychiatric patients with no apparent toxic effect. They lose sight of the fact that abnormally high doses are administered under very stringent medical supervision.

Agencies that control athletics are not concerned about the use of vitamins or other nutritional supplements, but they have become very concerned about the use of drugs. This concern and attempted control by authorities tends to make the athletes believe that there must be a definite advantage to the use of these drugs to merit the controversy that their use generates. As the bodies that control athletics become more dogmatic in their disapproval of drugs and more persistent in their efforts to curb their use, the athletes have become more certain that drugs must affect performance advantageously.

The athlete on amphetamine becomes keyed up for his event, which is desirable for optimal performance. He is mentally alert and, when observed objectively, appears to be emotionally ready to perform maximally. Mental attitude certainly can affect performance, and being mentally prepared for an activity or an event is desirable. Increased psychological preparedness appears to be the only rational reason for the continued use of amphetamine.

ANDROGENIC-ANABOLIC STEROIDS

Most users of steroids feel that beneficial effects in strength occur only when accompanied by heavy workouts—usually weight training, which tends to complicate findings, since this increase in training may account for some observed strength gains.

It is apparent that the use of anabolic steroids is extremely common, especially among weight men. Individuals are naive to believe that athletes would not resort to these measures in their search for excellence. We are living in a drug culture and the sporting world is not immune. Drug taking is not considered immoral, unsportsmanlike, or dangerous by youth. Drug procurement is apparently easy, and athletes desiring drugs have little difficulty obtaining them. Many athletes admit that physicians supply them with anabolic steroids and, although they recommended normal dosages, they do little to prevent the individual from increasing the dosage at will.

The medical literature indicating possible liver impairment with the use of anabolic steroids further concerns athletes, trainers, coaches, and team physicians. Finally, ethical and legal considerations make the problem of anabolic steroid use one with impossible dimensions.

Four major investigations report that anabolic steroids do not help weight and strength development and indicate that the anabolic steroids have no place in athletics. They point out that weight gain may possibly be fat accumulation or water retention, and not lean muscle mass. Six other equally well designed studies report significant improvements in weight, strength, and muscle size. The studies report no significant side effects of drug therapy and suggest that gains occur when the strength workouts are near maximum and when accompanied by a high-protein diet.

The predominant attitude among authorities is that the solution to drug use by athletes is through understanding and education. However, the overly strong views of the "establishment" make it difficult for athletes to admit to the use of drugs. Too often the coach, trainer, or team physician plays the role of a disciplinarian instead of an understanding counselor,which makes the hope for drug control through athlete cooperation almost impossible.

Senator BAYH. We will recess these hearings to reconvene on July 12, 1973, for subsequent testimony.

[Whereupon, at 2 p.m. the subcommittee recessed to reconvene Thursday, July 12, 1973.]

PROPER AND IMPROPER USE OF DRUGS BY ATHLETES

THURSDAY, JULY 12, 1973

U.S. SENATE,
SUBCOMMITTEE TO INVESTIGATE JUVENILE DELINQUENCY,
COMMITTEE ON THE JUDICIARY,
Washington, D.C.

The subcommittee (composed of Senator Bayh, Hart, Burdick, Kennedy, Cook, Hruska, Fong, and Mathias) met, pursuant to notice, at 9:10 a.m., in room 2228, Dirksen Senate Office Building, Senator Birch Bayh (chairman of the subcommittee) presiding.

Present: Senators Bayh, Mathias, and Fong.

Also present: Mathea Falco, staff director and chief counsel; John M. Rector, deputy chief counsel; Mary K. Jolly, editorial director and chief clerk; Nancy L. Smith, research director; B. Elizabeth Marten, secretary to the staff director; Lance Ringel, assistant clerk; and Catherine van de Velde, secretary.

Senator BAYH. We will reconvene our hearing this morning on the proper and improper use of drugs by athletes in athletic competition and the related issue of the adequacy of laws governing the improper distribution of drugs in athletics. We are particularly interested in these concerns as they pertain to high school, college, and amateur athletics.

Reports implicating athletes in the traffic and abuse of drugs are increasing, thus it appears that athletes are not immune from general drug use, which confronts our Nation today.

I am particularly concerned. however, about the ethical implications of athletes in the quest for victory and their relation to amphetamines, in relation to hard work, discipline, and dedication to honest competition. I believe that it's important to win, but that how the game is played is equally important. This has been a long-time tradition, sustaining amateur athletics over the years. I am hopeful that we will find that the average amateur athlete has not surcomed to temptation and the philosophy that victory is important enough to risk ruining a life of, indeed ruining the ethical framework of amateur athletics.

As I mentioned on June 18th when this series of hearings began, the subcommittee raised a number of issues relative to the use of drugs by athletes. First, the ethical consideration involved in the use of additive or nonrestorative drugs including substances such as cocaine, amphetamines, and so forth. Second, an assessment of the extent of the use of these drugs by athletes. Third, current policy guidelines and enforcement mechanisms relative to the improper use of drugs by athletes. Fourth, the nature and extent of current efforts to educate trainers, coaches, and others regarding the proper and improper use of drugs; and fifth, suggestions and recommendations to facilitate the proper use of drugs in athletic competition.

The witnesses scheduled to testify this morning, as you all know, are particularly well qualified to provide expert advice and insight on these very important issues.

This committee has spent a number of years exploring critical drug problems as they exist in the street. They exist in our communities, and indeed they exist in the black market and in some of the finest pharmaceutical houses of America.

We have a great deal of cooperation across the board and many witnesses like those this morning, who have given their lives to athletic competition and building the body and mind, have shared their expertise with us. The drug problem has reached a tragic level of significance in our country today and many are most appropriately concerned. I think we have made some progress. It would be alarming to find a significant level of drug abuse in the area of athletics, a past-time and a profession, which is designed to build the body and mind and to make more wholesome lives.

Our first witness this morning is Phil Shinnick, director of athletics, Livingston College, Rutgers, New Brunswick, N.J.

Mr. Shinnick, will you come forward? We appreciate your being with us, sir. I would like to place in the record your rather significant biographical sketch which shows your many accomplishments, the long jump champion in the NCAA and Olympic champion, and we appreciate very much your presence here, sir.

STATEMENT OF PHIL SHINNICK, DIRECTOR OF ATHLETICS, LIVINGSTON COLLEGE, RUTGERS, NEW BRUNSWICK, N.J.

Mr. Shinnick. I am happy to be here too.

Drug usage in athletics has been a major concern in my life the last 10 years. I would like to share a little bit of the knowledge that I have had through personal experiences and some of the studies that I have done in this area. I think I would like to start off and cover five of the major key concepts that I would like to talk about, and maybe you could ask some questions.

Drug usage in athletics is a very gradual process. It's not one day you have to make a moral decision whether or not to take drugs, and it starts from a very gradual process of vitamins to restorative drugs, then to amphetamines and anabolic steroids. Usually in the life of an athlete, it takes 5 to 6 years to get into the major drugs such as amphetamines and anabolic steroids.

I would like to also demonstrate that some of the pressures on the athlete that perhaps cause him to take some of these drugs. For example, it could be an economic or political pressure to win, to perform when the process is subordinated to the product of winning. I would like to also talk about the structure that is dominating athletics, not only within intercollegiate athletic departments, but also within professional teams and high school teams, and some of the problems that this highly rigid structure brings about in terms of the drug usage in the athlete.

I would like to talk a little bit about the lack of clarity in some of the medical research and information that gets down to the athletes, and also talk about how the professional athletes are serving as a model for not only the colleges but the high schools, and talk about some of my general conclusions.

I would like to go into some of the specific reasons and perhaps if there are any key concepts that you would like to go into in depth, I can do it. According to by experience in the last 10 years, drug usage in athletics has increased. One of the big difficulties in getting any reliable information is athletes have been afraid to talk because of the fear of reprisals either to the athlete himself or his team; especially in professional sports when bad publicity is associated with drugs, plus admitting that they are taking drugs in many cases, which are done illegally. The information that I have gotten is from my own personal experience, journals of athletes, and some surveys that I have done.

Drug usage started for me in 1963 when I was at St. Louis at the National Men's Outdoor Amateur Athletic Union Championships, and a drug representative from the Riker Co. was there, he was promoting a drug called Norflex, and he gave the athletes free bottles of it. I started using drugs for the first time then. He told me then that Norflex could be used to relax muscles, and there would be no problem with reflex action in using this drug.

Senator BAYH. May I ask you, that is a drug that requires a prescription, does it not?

Mr. SHINNICK. Normally, yes, sir.

Senator BAYH. And this fellow was peddling it on his own, giving it away?

Mr. SHINNICK. He had approximately 48 bottles of it, a box, and the price at the drug store was around $7 a bottle.

Senator BAYH. Did any of the athletes stop to think about the necessity of asking a doctor what impact these pills would have on their performance?

Mr. SHINNICK. Usually the athletes, all they have to do is mention that this might increase their performance, and other considerations go by the wayside, especially when there is a national championship and you train, or have trained for 2 or 3 years, and those types of considerations seem to go to the background because of the pressure of the moment.

Senator BAYH. I can't say I accept that philosophy. In fact, I oppose it. I can understand it, I might add. But what I have great difficulty in understanding is how an athlete, who trains and really tortures himself and puts everything else aside to reach a plateau, national competition, can accept the word of some pill pusher as to what will cause increased competence and increased competitive ability, increased performance. It is sort of like buying a pig in a poke, isn't it, for a highly trained athlete who has done everything physically possible to accept some pill pusher's opinion as to how he can do better? Nobody questions that?

Mr. SHINNICK. No. It's my impression, at least, athletes will do almost anything short of killing themselves to have an increase in performance when they are under pressure.

You know, athletes aren't rational sometimes. I don't think I have been rational in some of my approaches to drugs during the years.

Senator BAYH. Excuse me. Go ahead. It's just that as a very, very amateur athlete, nothing at all compared to your experience or competence, it is hard for me to understand why somelike like yourself who got to the top, not a sandlot athlete, like myself, would take this approach.

Mr. SHINNICK. Recounting what happened in 1963, at that time I had just broken the world record, and I was competing in the men's outdoor national championship, and I was favored to win and I was about 19 years old, and I was very nervous, and you know, anything sounded good because of the tremendous pressure to do well. You just grab at straws sometimes.

Senator BAYH. Did you ask your coach?

Mr. SHINNICK. Did I ask the coach?

Senator BAYH. Yes.

Mr. SHINNICK. My coach wasn't there.

Senator BAYH. Well, go ahead, please.

Mr. SHINNICK. That same fall, I was at the University of Washington. I was on the track and field team, and I noticed that many athletes were taking pills before practice, and some of the pills were just vitamin C and salt, but another pill that they were taking was Darvon. They were taking from two to three or four Darvons per practice, per day, and the reason they were taking this was that in 1963, I found out later, that in 1958, they introduced a new concept in football, which was called spear tackling, where you put your head in the chest of an opponent, and you tackle with your forehead rather than with your shoulder. This was a fairly new concept during the 1950's and 1960's, and it changed a lot of the football methods. Because of the spear tackling, a lot of the football players had gotten headaches. So they were taking Darvon before they would go out and practice every day so their heads wouldn't hurt so much. This was at regular practice during this time. I think that is very significant, because of the brain injuries and things like this.

During that period, too, their was a football player named Rick Sortun who said the coaches were giving him bennies and amphetamines. They were then giving them to the key players so that they could increase their performance, and this was during the 1961–64 era. And at this time, a lot of those coaches are gone, but that was the first time I really saw these things happening. I was a sophomore in college.

Senator BAYH. One thing we can do by holding hearings like these is to get rid of some of the wive's tales, some of the suspicions, some of the rumors that a few pills do in fact consistently improve performance. As someone who has excelled and been a national and world champion, I would like to get your thoughts on these claims. What has been your experience? In the first days of hearings, we had testimony from athletes, trainers, and coaches that in the events where massive strength is required some drugs are helpful and even then, there were questions but in other kinds of sports, where brute strength is not required, there has been no documented proof at all of increased performance. Sometims people are not performing better, but they are relaxed into thinking they are better. Would you give us your personal opinion, from your long experience, as to whether popping a few bennies or uppers really has helped you or other athletes?

Mr. SHINNICK. Well, I think there is one variable on that, that is perhaps there is no clear evidence on this to show that they do increase performance, but one thing that amphetamines do do, and especially the amphetamine called Ritalin, is give you a feeling of confidence, and for most athletes their biggest problem is their lack of confidence and so simply having that feeling of confidence, perhaps taking Ritalin every day, you can start to gain a feeling of confidence. My personal experience tells me that those athletes who have been taking amphetamines in fact did increase their performance, maybe it was a dependency that they thought simply by taking the pill, it did increase their performance. There was one study in 1959 that I read in a medical journal, there hasn't been any research since then that seems to supercede that report, and the study has shown the performance of highly trained athletes can be significantly improved in a majority of cases, about 75 percent, with the administration of amphetamines. One of the criticisms that I have about the medical reports is that they do their experiments on normal people rather than on highly trained athletes. I think there is a big difference, because an athlete who trains for 10 years is in much better physical condition than the normal person. I think he is going to react differently, sometimes, to a drug, especially when he trains 4 hours a day, and if you take a study on people who have never trained or say they have trained for 6 weeks, an hour and a half a day. I think that athletes are a little skeptical of those reports we just talked about, because our experience says that those people who are taking it, are doing quite well. In fact, three or four of my friends are Olympic champions, and they have been taking them for 4 or 5 years.

Senator BAYH. I am glad to get your assessment of that report. Dr. Cooper, one of the witnesses, was very critical of this particular report, of the kind of controls employed, and its accuracy.

Mr. SHINNICK. The methadology might not have been as good as they have now, because I think the statistics and the scientific community have progressed as a whole. I think the scope of it was fairly good, I think.

Senator BAYH. Well, please proceed.

Mr. SHINNICK. In 1964, when I made the Olympic team, we were in Los Angeles, and a Mr. Hoffman was there, and he had a room checked out in the same hotel as the Olympic team and he was giving out free vitamins, minerals, proteins, and things like this, and I dropped by and picked up my free vitamin supplements. Athletes will take almost anything, especially amateur athletes. I took a lot of these pills over to Tokyo and I experienced an allergic reaction to these vitamins. I really overdosed myself. I think a couple of my friends have done the same thing. I made the mistake in 1966, and got a tremendous allergic reaction to vitamins. But the point is that they very readily accessible, and they are almost being pushed into major competition from these firms.

When I went to Los Angeles in 1967, I was a member of the Southern California Striders, and a representative of the Air Force. I really was exposed to amateur athletes, and on page 5 of my report, I have a list of the type of drugs that my friends came up with that

I should take if I wanted to be great, and as you can see here, it includes Winstrol, 4 tablets a day, (2 milligrams) and there is a Lilly series of B-12, (10 CC) B complex, and Vitamin C, and there are all sorts of different drugs here. But this is on a daily basis, and many athletes take more than this. The person who came up with this list of drugs has a hospital cart that holds syringes, medication, and paraphenalia. And some of the athletes that I know have pharmaceutical books, and they become almost experts on any new drug that comes out and then they experiment on it.

Senator BAYH. They do this without consultation with a doctor?

Mr. SHINNICK. Yes, sir.

Senator BAYH. Where do they generally obtain the drugs when they are not at a meet or a hotel?

Mr. SHINNICK. Well, one is from a veterinarian. That is a big source of supply. People have some sort of connection with these veterinarians and they are able to get the drugs, and get big supplies to supply the other athletes. There seems to be no problem in getting the drugs, it's usually through a legal means. There seems to be a big mistrust between the athletes and doctors.

Senator BAYH. Obviously your experiences indicate that there is no difficulty in getting the drugs. I respectfully suggest that you look at the "authority" when you say through legal means, because anybody obtaining amphetamines or similar controlled substances, without proper prescriptions are doing it illegally.

You say you can get them through a vet or through a friendly neighborhood pharmacist, or from the doctor, these are not necessarily legal means. Certainly the law is very clear. These drugs can only be obtained and administered legally through prescriptions.

Mr. SHINNICK. It doesn't seem to be any complication of the law in the field of athletes.

Senator BAYH. Perhaps that is what we should look at.

Mr. SHINNICK. I think if a Federal investigator walked into the dressing room of a National Football League team or the Olympic team or some of the major competitions in amateur athletics, weight lifting and so forth, I think they would be quite surprised at what they would find, and we would have a lot of people in jail.

Senator BAYH. Is this an acceptable practice for amateur athletics?

Mr. SHINNICK. Are you asking is this widely done, or what. how are you asking that question?

Senator BAYH. No; I am asking both from the standpoint of the physical wellbeing of the athlete and from the standpoint of what ethics we should maintain. Should a different criterion be applied in professional sports? I am not suggesting that we should. Let's limit it to your experience in amateur athletics. Is this practice of having these pills available in the locker room good? I look at you and perhaps by what you say—the B.A. in economics, the M.P.A. in public administration, doctoral candidate in philosophy—if there is a stereotype of traditional jock, you don't fill the bill. From the standpoint of having a great deal of athletic experience as well as a great deal of astuteness in the classroom, how do you view the use of these drugs by athletes?

Mr. SHINNICK. How can I justify my taking drugs? Is that what you are saying?

Senator BAYH. I am not asking you about what you have already done. I am asking you to help us explore what standards we should apply in the future, you can't undo what has been done. Is it a good policy ethically and physically to have such drugs as these available without the doctor's care, without any prescription according to law?

Mr. SHINNICK. Well, right off the top of my head, I would say no, that the drugs shouldn't be a part of the amateur athletics, that the process should be just as important as the product, and athletics should be an extension of human expression, and athletics should be defined by the individual, but unfortnately in American sports and in our society, there seems to be a structure that has a high emphasis on winning. There seems to be a structural mechanism that says coaches are hired and fired according to how many games they win. There seem to be political pressures on athletes especially during these times to win, not economic pressures, but political pressures to win for the country. When I was Assistant Chief of the Mission to the 1965 World University Games in Budapest, part of the funds were supplied by the Government, and we had several representatives from the State Department and I was in charge of the 50 people on the teams. We had fencing, basketball, et cetera, and I was under constant pressure from the gentlemen at the State Department to beat the "Commies," so that I don't see any difference between that and the economic pressures to win, that the highly competitive athletic is under, which would become economic and political pressures.

Senator BAYH. Excuse me just a minute. I have a phone call.

Mr. SHINNICK. Let me continue, then.

In 1968 at the South Lake Tahoe, I was training for the U.S. Olympics—should I continue?

Mr. RECTOR. Why don't you wait a minute? He will be back shortly.

[Short recess.]

Senator BAYH. Did you have a chance to see what the competitors were using? Were they using these same drugs.

Mr. SHINNICK. Oh, yes, that is very interesting, because they are under the same type of pressure. They are under more pressure, and I would just say in 1969, when I was in Russia for the U.S. versus USSR track meet, I went over to a friend of mine's place, named Igor Ter-Ovanesyan, who was the ex-world record holder in the long jump, and I went into his lavatory and above his toilet, there was a whole display of drugs, and they were vials for injections. From the information I gathered most of the athletes routinely are given shots once a month of steroids, vitamins, and just about anything you can think of. I think that the European athletes and the Russian athletes are more sophisticated in drugs, there is a qualitative difference, though. The Russian athletes and the German athletes, they are under closer doctor's supervision. In 1969, when I was over at the World Military Championship that same summer, I was talking about before (the wintertime when I was in Russia, and I went back again in the summertime), and I pulled a muscle, and I saw the German physician, and he came up to me and said that they would fly me to Munich, and that I would have that pulled muscle repaired within 10 days if I would check into a sports hospital because they had all the people in the hospital who are specialists who deal with this, and they would fix my injury. There is no comparable medical facility in the United States to take care of injuries or talk about drugs. A lot of drug information is very contradictory. We have people saying drugs don't help athletes in their athletic performance yet athletes that I am familiar with are taking drugs and are increasing their performance from sometimes average athletes to world class champions. There is no trust in the medical profession among the athletes. At least that is among the friends that I know, but definitely there is a difference between the United States and the European countries. There, they are under more medical supervision and they are taking more drugs, I think, on a legal basis.

Senator BAYH. When you talk about drugs that you have seen available, and are used to improve performance, are you referring to steroids or amphetamines?

Mr. SHINNICK. Generally steroids and amphetamines, but for example, in weight lifting, one of the big things is taking pain pills during competition and amphetamines so that when you are lifting you don't get pains, so you can lift more. There is a whole assortment of drugs, everything you can think of the athletes take, from aspirin to Darvon, to enzymes to anabolic steroids, and amphetamines.

Senator BAYH. Would you tell us specifically, what drugs you have taken?

Mr. SHINNICK. I had a great difficulty with amphetamines because one of my biggest problems in competition is staying calm and relaxed. If I let myself go. I would get so psyched up I can't even walk, but this is because I get butterflies, I almost get sick before a track meet, but with me, if I took amphetamines, I wouldn't be able to compete.

Senator BAYH. Would you excuse me? I have another call. I will be right back.

[Brief recess.]

Senator BAYH. I am sorry. We have some things cooking over on the floor, and we are trying to keep an eye on them.

Mr. SHINNICK. Your last question was what drugs had I taken. I pretty much stayed away from amphetamines because one of my problems is getting too high for competition, but I did take anabolic steroids last spring, of 1972, and I put off taking steroids for 6 years when most of my friends were taking them, and about February I got very nervous because I was in training very hard, and was taking my Ph. D. examination and I just moved in to taking steroids. I took them for about 4 weeks. I saw a slight increase in my performance. I have taken steroids, plus when I had seven or eight major hamstring pulls I have had to take all sorts of drugs which would be cortisone, pain pills, Norflex. When you have injuries, you are a walking pharmacy, you have to take three or four sets of pills a day for a period of 3 or 4 weeks.

Senator BAYH. When you were injured, you had the doctor diagnose what was best to correct the injuries, whereas the steroids or amphetamines or whatever from the pill collection, dispensed at some of these meets, or in the locker rooms that you describe, are taken without any medical advice, without any attention to the ramifications that they can have on the human being. You mention that some take an overdose of vitamins. That is a heck of a note, an overdose of vitamins.

Mr. SHINNICK. I was a little nervous and what I did, I went to a doctor and I had one of those tests where you put a dye in your blood and they find out how your kidneys are. After I took it, I went back and went through all those tests and I was a little more careful than most people. I think the key concept here is the marginal difference between taking all of these restorative drugs even if you are under a doctor's care and taking anabolic steroids; you can get very used to taking vitamin pills and the difference between the different color pill, it becomes—it sort of shatters out. I think there is no point where you can say these pills, I am going to take this. I am going to take this, I am not going to take this, and it becomes a process that you become involved in over a period of time and for me it was 11 years, it just didn't happen overnight.

Senator BAYH. Where did you obtain the steroids that you took recently?

Mr. SHINNICK. Steroids, I was under a doctor's care, but they are readily obtainable from fellow athletes, God knows where, I think I mentioned the veterinarian, the friendly pharmacist, and so forth. I think especially as an athletic director, one of the big things that you do see is winning and performing is very much equated to improving your manhood. I think that with this type of pressure on you as you define your manhood, you can readily get into steroids and amphetamines. When there is that type of pressure. I have got all sorts of examples here in this document and I don't know whether you want me to go into that or not.

Senator BAYH. I will put it all in the record.

Mr. SHINNICK. Okay, I have examples of a cyclist in Europe who said that any athlete who didn't admit they were taking amphetamines was a liar. For example, Tom Simpson, an English cyclist, died because of an overdose of amphetamines. It is very common in the European circles to be taking these drugs. In weight lifting and the Ohio competition, the Columbus, Ohio competition in 1970, they tested three of the top place finishers and they were all disqualified and the people who were fourth, fifth and sixth went up to take the medals, but they didn't test them and they would have found out that they were taking amphetamines also. In weight lifting it is very prevalent.

In baseball, clear back in 1959, we have a baseball player saying that they have been taking bennys and all of these new publications that have come "Out of Their League" by Paul Meagyesy" They Call It a Game," by Bernie Parrish, they have documentations where tremendous use of amphetamines and steroids have been used in baseball, golf, and all sorts of sports. There are just all sorts of case studies on these. So it is not just in amateur athletics; but one of the things that we are finding, the big variable is those teams which are expected to win from the economical and the political reasons are the ones who are usually involved in the steroids and amphetamines.

A good example of this is the survey that we had at the University of California, at Berkeley in 1970 which showed that 62 percent took depressants, 48 percent took amphetamines, 26 percent took pain killers, 28 percent took anabolic steroids.

I did a comparable study at Rutgers University football team and found out that less than 1 percent were taking amphetamines and steroids and the big difference between Cal and Rutgers being that Cal is big time and Rutgers isn't. I took a survey of the 150-pound class at Rutgers, the football team, and found out that they weren't taking steroids, most of all they were getting high, they were smoking marijuana before their competition.

So you almost move from a spectrum which is highly competitive, from amphetamines and steroids to the team that doesn't have that pressure, which is taking counter-culture drugs.

There are the kind of surveys I did and found these things out. One of the big problems is the tests are difficult to administer and evidence of this is the Olympic test for amphetamines. I was talking to some of the European athletes and it looks like the East Germans have come up with a new amphetamine that can be inhaled and be out of the blood stream in a short period of time. It can be inhaled before your event in track and field and it won't show up on the test. So there are types of drugs now being developed to beat these tests.

One of the biggest problems in testing is that you have all of these pressures on the athletes. And then you put another pressure on, that they shouldn't take drugs, this is to me sort of a naive idealism to think that if everybody tries harder, somehow the situation can change because you have a structure that is typified by very little decisionmaking by the athletes in the process. There is a high rigidity in personal behavior and all sorts of symptoms of a very rigid authoritarian structure. I think a lot of this is one of the problems why athletes are taking drugs and I think the rigid structure increases as the demands for performance increases. So I don't think by putting more tests on you are going to alleviate this drug abuse because I think very much you have a structural problem with the pros. The professional sports use them, and they are used as a model for all the colleges and so that they look to the professional as the high school looks to the college. The professional sports are very much involved in drug abuse and the mass media creates an image of what sports is, it creates an ideal of what sport is with very few people participating with a lot of vicarious involvement plus, within that structure there is a high socialization process that teaches athletes to be obedient. It teaches them to work hard and follow the rules, but also under pressure to perform consistently. When you have these types of demands for certain behavior, these behaviors will be ellicited by taking drugs. I think we have a structural problem.

Senator BAYH. Well, I must say I find it difficult to rationalize some of the organizational structure and the redtape involved in amateur athletics in which our young athletes are involved. They are involved for the competition, it is a skill, and that skill could be mired down. It is more important to be competitive than to have an allegiance to one of the organizations.

I have difficulty in rationalizing that kind of structure. That is one thing, but to suggest that we shouldn't set any standards to try to protect the health and well-being of the athletes is another. I am not willing to go that far.

Mr. **Shinnick.** I am not suggesting that, I am just saying that is not the only thing that should be recognized. There are simply more demands on the athlete, he is the one that has all of the demands put on him. Some of the laws we do have against amphetamines and steroids, especially without prescriptions that you yourself suggest should be applied in the sports arena just as they are in any other sector.

Senator **Bayh.** Just because it is happening in professional sports—if it is happening there, it is bad and it ought to be stopped—I don't think we should permit it one place and curb it another place. We are trying to find out how widespread the use or abuse is and what we can do about it.

Mr. **Shinnick.** If we don't do something about the dominant conditions that lead to that, I don't think there is any real solution. It is in a personal solution rather than in the structural solution.

Senator **Bayh.** Well, I suppose one of the dominant conditions in athletics is a great deal of physical and psychological strain as well as pain at various times. How do you leave those influences?

Mr. **Shinnick.** I don't quite understand.

Senator **Bayh.** One of the reasons I suppose, at least by your own description, that one takes pills when you are practicing spear tackling, so is to prevent headaches.

I don't know how spear tackling is ever going to be like fishing in a riverboat. The very nature of the sport, physical contact causes pain. How do you relieve that kind of pain?

Mr. **Shinnick.** Well, look at the nature of the sport. I think that is a serious question that has to be looked at. As long as we have those demands and spear tackling and things like that, plus there are informal norms that are accepted by the peer group. These put a lot of pressure on the athletes which supercedes any concern for his own health or psychological needs.

Senator **Bayh.** You suggest in your testimony, as I recall, that we should have spot checks for drugs at all athletic events.

Mr. **Shinnick.** Not at all. I read in the paper about a week ago that the National Football League was going to have testing programs but they were not going to test the league championships or the Super Bowl and I don't understand that, because it would seem to me that the test that you should do would be the league championships and the Super Bowl. In track and field they test at the Olympic trials and the Olympic Games and the athletes know if they are dependent upon the drugs, when they get to the big contest and they can't take drugs. A lot of athletes that I knew went off of drugs, to become familiar with not taking drugs, because they wanted to compete in those contests. I don't understand why they wouldn't have testing in the Super Bowl and the league championships, rather than the regular games.

Senator **Bayh.** What sort of testing, if any, would you recommend to deal with drug usage by athletes? Would you suggest that this problem be approached by establishing prohibitions?

Mr. **Shinnick.** I think there should be spot testing. You don't have to test everybody, you can randomly pick 10 people from each team, but if you are asking the question what types of tessts we should have, are you asking that question?

Senator BAYH. Yes, sir. General, not specifically, what types of tests, how the tests would be administered, where we test and so on.

Mr. SHINNICK. I think the question that we have to ask before you ask that question is, who do these people report to that are doing the testing. For example, one of the problems that I see is the doctor's reporting to the management although there is a certain amount of professional ethics involved in the medical profession, I think there is an economic reality. They may not be catering to the best interests of the athlete. The medical doctors perhaps should have some sort of relationship with the player's association so that there would be a buffer between the pressure of management and the doctors. The testing program should be done independently of the league, it should not be done by the league. There is a conflict of interest there.

It is to the best interest of the League that drug usage isn't disclosed to the pubiic. I think it would hurt the profit of the game and the economic interests of the National Football League. They are not necessarily concerned with the interests of the athletes, but the creation of consumer demand, so they can make profit which is a structural thing, and I would see the testing by an independent agency.

Senator BAYH. Well, did the Olympic testing procedures curb drug use in Mexico City?

Mr. SHINNICK. According to my experience in relation to the athletes that I competed with, all athletes were concerned about not getting caught. So they started decreasing their dosages of drugs during the Olympic year. They were trying to get used to not taking the drugs, being afraid of being detected. So it was a deterrent.

Senator BAYH. Did times get slower, distances shorter?

Mr. SHINNICK. Anabolic steroids is one of the big drugs taken to get stronger. Steriods are taken during practice sessions, not competition so amphetamines would be the big drug that is taken during the competition. A lot of the drugs are taken before the competition, to get to the competition without being injured, to make you faster and stronger. People continued taking these drugs during practice sessions but I think it did decrease amphetamines usage during competition.

Senator BAYH. Are similar tests conducted during the Olympic trials?

Mr. SHINNICK. No, they tested at the trials, and I think the top three finishers in each event had to be tested and they had to go in the trailer and have a urine sample and they had a medical team there testing them.

I thought that was a pretty reasonable way of doing that. I have talked to some of the people of the National Football League Players' Association and they are against drug testing, it is another pressure on them. I think sort of random testing would not be that oppressive to them, especially when there is such a tremendous drug usage. The usage filters down to the college and high school levels, and this is when the pros serve as a model and I think something has to be done even though the Players' Association objects to it.

But I think as you suggested yourself, the big problems are of health and psychology. One of my friends took amphetamines for 2 years on a daily basis and his personality changed. When he came off of the steroids because they went to Olympic testing, he changed personalities again. He went through a lot of psychotic states, even a disassociation with reality. I think there is a tremendous problem with amphetamines, psychological and health problems.

Now, the ethical problem that you bring up, I don't see how we are going to solve that ethical problem when there is little marginal difference between restorative drugs and anabolic steroids; it is just a different colored pill. You get used to taking drugs, so if you put it as an ethical and moral decision, I don't think that is a real solution. I think you have to go to the health and psychological problems with drugs and come up with what kind of testing has been done and present good information on psychological problems with amphetamines. I think that would be much more reasonable than an ethical moral concept.

I think we have covered just about everything that I had in this report.

Senator BAYH. The committee has been very interested in your statement.

As an athlete, I would say that perhaps it was easier to apply the standards that you suggested. Yet to deal with the moral and ethical issues, we should look at what we're trying to accomplish in athletics. Should the standard for the world record in the long jump or the 100-yard dash be the capacity of a human being to perform as a human being without the assistance of drugs, or should it be the standard a human being can achieve when he or shee is all souped up or geared up with artificial assistance?

Mr. SHINNICK. I agree that the quality of competition is the same whether they throw the shot put 66 feet or 71 feet. The process is the same. What really happens I think when you do take drugs, you just move the standards a little higher relative to human expression. I believe the same thing that you do; it is an artificial thing. You have to look to the demands of the environment to see causes for these sorts of things.

I see myself as the perfect example, I have been very sensitive to the drug issue, you know, something that I argued in my mind for years and years and I ended up taking steroids. It took 4 years and finally it wears on you, when you know that your competitors are taking the drugs and you want to make the Olympic teams because you have been training for years and you may not make it because you are not taking drugs. This is a very difficult thing, especially if you are married or you have an occupation and you are spending time in this activity, you want to do well, you have an investment and it is difficult to not take drugs.

Senator BAYH. Thank you very much, Mr. Shinnick.

I appreciate your testimony as well as your very frank disclosure of your personal experiences. I hope this will not prove embarassing for you. It has been very helpful to us to try to hear from someone who has been there—in the events, in sports magazines and on the front pages of sports pages. You have been there and I appreciate your sharing your thoughts with us this morning.

[Mr. Shinnick's prepared statement is as follows:]

BIOGRAPHICAL SKETCH—PHILLIP K. SHINNICK

Married: Two Daughters.

Home Address: 6 Lenox Street, Edison, New Jersey.

Position: Athletic Director, Livingston College, Rutgers University: Assistant Professor.

Academic background: B.A. Economics, University of Washington, 1965; M.P.A. Public Administration, University of Washington, 1967; Public Policy Formation, University of Washington, 1967; Candidate in Philosophy Organizational Theory, University of California, Berkeley, California, 1971–1973; Dissertation to be completed in 1973 (Organizational Theory and Change).

Military service: U.S. Air Force, 1967–1971, Captain, Los Angeles Air Force Station; Air Force Commendation Medal, 1971; Manpower Officer, Air Force Systems Command.

Competition background: NCAA All-American 1964–65, Long Jump; U.S. Olympic Team 1964, Alternate 1968, Long Jump; broke World Record in 1963, Modesto, California; on nine U.S. National Teams, 1964–1970; world Military Champion, 1968; in 1972 was ninth in the World by mark in the long jump—26′ 5½″.

Other athletic experience: Captain University of Washington Track Team, 1963–1964, 1964–1965; Asst. Chief of the Mission, World University Games (FISU), Budapest, Hungary, 1965; Associate Director, Institute for the Study of Sport in Society, 1971–1972, Oakland, California; Captain, U.S. National Team, Pan Conference Championship, Tokyo, Japan, 1969.

Other experience: Municipal Government Intern, City of Seattle, Mayor's Office, 1966–1967; Democratic Precinct Committeeman, City of Seattle, 1965–1967.

Profressional papers: 1966, Command Institute Federal Bureau of Investigation, Tacoma, Washington, "Manpower Accounting"; 1971, "Drugs in Sport" in Edcentric, October, 1971 and Engage, October, 1971; 1973, "Organizational Change and a Newer Model", to be published in the New School of Education Journal, 1973.

Awards: Distinguished Citizen of the State of Washington, 1964; University of Washington Hall of Fame, 1965.

PREPARED STATEMENT OF PHILLIP K. SHINNICK

I am pleased to be here today to discuss with you drug usage in athletics, something which has been on my mind and has been a reality in my life during the last eight or nine years, both as a track and field athlete and as a student in the study of sport and society. Drug usage in athletics according to my personal experience and study has been on the uprise during the last ten years. Although some American weight men in track and field, according to 1956 Olympic Champion Harold Connolly, had taken anabotic steriods as far back as the 1960 Olympic games in Rome and Jim Brosnan in his 1959 diary of his experiences as a major league pitcher revealed how amphetamines were used by players to get through the grueling baseball schedule. It is difficult to document these things in a scientific manner because of the athlete's reluctance to discuss drug usage for fear of reprisals either to the athlete himself or his team. But I do think that the indicators we do have—journals of athletes, personal conversations, and some surveys, do suggest a general increase in drug usage. Before I talk about some of the forces which act upon the "athletic environment" that perhaps contribute to drug usage in athletics it might be best to document from my own readings and experience some specific incidence of drug usage. I'd rather not talk about the general classifications of drugs such as amphetamines, anabolic steriods, pain killers, enzymes, etc., because it seems that a medical doctor or someone interested in this field could do it much better than I could. But I will recount to you a cronology of how I became interested in drugs and what drugs I used, and cases of different types of drug usage. The first time that I was introduced to a drug that wasn't Vitamin C or a salt pill was in 1963 in St. Louis at the National Men's Outdoor Amateur Athletic Union Championships. A salesman from Riker Co. was at the meet with samples of a drug called Norflex which was to be taken before competitions in order to relax the muscles and prevent muscle pulls and at the same time would not inhibit reflex action. I was given a bottle of Norflex with the knowledge that other "great" athletes had used the drug.

And by the way, I started taking Norflex that next spring and continued taking Norflex for the next seven years.

In the Fall of 1963, while I was training at the University of Washington on the track and field team, I noticed football players talking about "darving" it up for practice. What this meant was that football players were taking from two to four Darvons (a form of pain killer) before practice to dull the pain in their heads from spear tackling. Spear tackling was introduced at Washington in the late fifties by Jim Owens, head Coach at the University of Washington. Rich Sortun a star college football player at Washington in the early 1960's and a six-year veteran of the NFL related how an assistant coach at Washington used to surreptitiously slip the players bennies before each game. In most training rooms, there is a dispensary that will give you a Vitamin C or salt pill just by turning the dial. This becomes a habit for most athletes before or after practice to just pop a few pills in the mouth.

Besides Norflex which I was introduced to the year before and I took because of tightness in my hamstring, I started taking daily vitamin C and sodium chloride pills with potassium, calcium, B-12 and mineral pills. That next year (1964 in the Cow Palace) I pulled a hamstring muscle and experienced a feeling of frustration and helplessness because 1964 was an Olympic year and I wanted to make the Olympic team. My brother, Nelson, also a track athlete at Washington had pulled a hamstring the year before and was still not competing so I was desperate to try anything to heal my leg. I was then introduced to the restorative drugs such as injections into the hamstring and anti-inflammatory pills. With the use of these drugs and rehabilitation techniques, I was able to make the 1964 U.S. Olympic team that year.

In Los Angeles in 1964, while the Olympic team was preparing for the Games, free vitamins were handed out by a Mr. Hoffman, owner of a brand of high protein and multi-vitamin products. I picked up my free samples which included protein powder, minerals and a variety of vitamins. At the Olympics in Tokyo that year I started using daily doses of protein, vitamins and minerals and experienced an allergic reaction. I repeated the heavy doses in 1966 and experienced a much worse reaction of fever blisters and swollen wrists and extreme itching. As you might see my introduction to drugs was gradual and did not include a point in time that led me to question significantly the marginal difference between say vitamins, muscle relaxers or even anti-inflammatory. And I do not think many athletes see any difference or problems in taking vitamin or dietary supplements and restorative drugs such as much relaxers or anti-inflammatory pills.

In 1967, I left the University of Washington after two years of graduate school and moved to Southern California as an Air Force Officer and competed for both the Air Force and the Southern California striders. These were my most active competitive years. I competed on eight national teams during that period and quickly became aware of new types of drugs in highly competitive track and field. It was in Los Angeles that I met athletes that were heavily taking drugs, some of which I had never heard discussed before. This whole business of drugs in sports is a very secretive affair and athletes guard new types of drugs that they are using against possible use by other competitors. One prominent Los Angeles track and field weight man actually had a hospital cart to hold syringes, medication and paraphenalia. He indicated to me if I really wanted to become "great", I would need to take the following drugs each day:

Winstrol (anabolic steroid): Four tablets of two milligrams a day. Two in the morning and two at night.
Lilly—Betalin Series, B-12, 10cc; B Complex and Vitamin C, 10cc.
Thiamine Hydrochloride. 30 cc.
Rulivite (Liver Injection), 30cc, (Supply of Injector [21 gauge 1½]).
Indocine: four tablets at night on full stomach, three nights in a row.
Decagesic: four a day—8:00 a.m., 12:00 p.m., 6:00 p.m., and 10:00 p.m. every day.

In 1972, because of the drug tests in Munich and the Olympic trials, this athlete decided to stop using amphetamines and mentioned to me after being off amphetamines for two months that during the time he was using amphetamines he had experienced a personality change. I can personally attest to this statement after watching and talking with him for several years. I decided not to take any amphetamines during practice or competition because of the possibility of dependency but I was much more in doubt about the use of anabolic steriods. This was a difficult period for me because I wanted to be a world class athlete and I was seeing friends improve their performances through steriods and amphetamines. My awareness of all these drugs became evident at high altitude training at South Lake Tahoe in 1968. The top eight athletes in each event had been assembled at South Lake Tahoe for a two-month training camp. Dr. Thomas Waddell, a physician as well as an active competitor and who himself placed sixth in the Mexico City Olympic Decathlon, stated that over one-third of the U.S. track and field team was using anabolic steriod during pre-Olympic high altitude training in 1968. Some administered the drug orally, others through injections. One-third is a high incident rate since the long distance runners and certain other events do not need to take anabolic steriods.

Recent conversations with athletes and workers during the 1972 competitive season indicated that many of the highly competitive schools are heavily using anabolic steriods and to a lesser degree other drugs. The athletes and coaches from these highly competitive schools such as say USC and UCLA, make the national teams and are exposed to drug usage by national athletes. Another source of information for college teams are athletes that are world class that train with the college teams. I myself trained at UCLA for four years.

I took anabolic steriods last year and experienced a slight increase of weight and strength but I did not resolve the morality issue in my own mind. I was convinced that if done properly with the proper doses it would not affect my health. In many ways the advent of drugs into sport was something that led me away from active competition. One of my justifications for taking steriods was the knowledge that my competitors might defeat me not because of my lack of ability but because of not taking drugs. Anabolic steriods are by no means the only drug used by athletes and neither is track and field the only sport where drug use is prevalent. At the 1970 World Weightlifting championship in Columbus, Ohio, nine of the first twelve medalists were disqualified when urine tests revealed the weightlifters had taken amphetamines. Weightlifters had called the test "ridiculous" since weightlifters have used amphetamines quite regularly for years. And in baseball, Chuck Dobson, a pitcher for the Oakland Athletics, publicly admitted he used "greenies". "When you've got the flu and you've got to pitch, what are you going to do?"

Cyclists have used amphetamines for years and as Jacque Anguentil, a French cyclists, as well known as skier Jean Claude Killy, openly admits to doping himself. "Everyone in cycling dopes himself", according to Anquentil, "Those who claim they don't are liars." Tom Simpson, a well-known English cyclist champion, died in the Tour de France in the 13th lap of the race going up a 6,000 foot climb in 90° heat and a vial of methamphetamine was found in his pocket and an autopsy showed him to be heavily doped.

As Tom Ecker, the National Coach of Sweden and author of six books said, "Today it's a great rarity for someone to achieve athletic success who doesn't take drugs. I normally assume that the winner of a sports contest is one who has a better pharmacist than his opponent. Drug usage has gone to such extremes that you are handicapped in competition if you don't take some. The way drug usage has accelerated, it seems inconceivable that one could hold his own without drugs." Holding your own means more than just taking steriods and amphetamines. Athletic inquries or the use of restorative drugs for the injuries such as painkillers, anti-inflammatory, enzymes, muscle relaxers, tranquilizers, and barbituates are probably the most widely used set of drugs. Every athlete who has had an injury and has not been able to perform knows the desperation the athlete feels especially if his livelihood depends on performance.

My experience with track and field plus being an athletic director over such sports as college football tells me that many coaches equate the proof of manhood with performing. Given these pressures it is no wonder that such things as playing with severe injuries occur. As Bill Gilbert wrote in a Sports Illustrated article, "Midway through the sixth game against Detroit, Bobby Braun, then of the Toronto Maple Leafs, was hit on the leg by the puck and carried from the rink on a stretcher. In the training room he received an injection of novacain. His leg was taped, he returned to the play, and he scored the winning goal in overtime. The next day it was determined Braun had a cracked right fibula. Nonetheless, he was shot with painkiller and willingly, probably eagerly, took his regular turn on the ice the following day." Or Wes Johnson, a star for the Baltimore Bullets, was repeatedly injected with a painkiller in 1970 for a sore knee so he could play. "For two and a half days after the last game, I felt like I could have cut my leg off", Johnson commented.

Court suits have resulted from such use of drugs to help athletes perform. Houston Ridge filed a $1,250,000 law suit charging conspiracy and negligence in the use of drugs against the NFL and various coaches, physicians, trainers and team officials of the San Diego Chargers. This case was recently settled out of court. Ken Grey, long time captain of the St. Louis Cardinals filed a $1,290,000 law suit against the Cardinals charging, among other things, that "potent, harmful, illegal and dangerous" drugs were administered to him by the Cardinals without his consent. Frank Herron, a football player for the Cardinals, played with serious injuries for several years and is now in his home in Stockton, California, finding it difficult to walk and there seems to be doubt whether he will ever walk without a limp.

I have discussed briefly some specific examples of drug usage in track and field and brought in cases of drug usage in cycling, weightlifting, football, basketball and hockey. The most difficult question for me to answer concerning drug usage is the use of amphetamines and anabolic steriods. One of the biggest problems facing an athlete in America today is obtaining reliable information on the drugs.

Information sometimes is quite confusing concerning drug usage. Dr. Donald L. Cooper, director of the Oklahoma State University Hospital and team physician for the Dallas Cowboys said ". . . it is the losers who take drugs—to make up for a lack of training. The guy who can't do it, is always looking for a gimmick. The winner is not." But it is my experience that this isn't the case, that winners many times take more drugs. And besides, in the American sport structure there are more losers than winners so in pure number terms this is correct, but a ridiculous general analysis. Dr. Palumbo, the director of a Sports Medical Symposium said that vitamins and steriods didn't help athlete's performance but actually harm athletes. And Dr. Cooper in a "double blind test . . . indicated androgenic-anabolic steriods show no increase in muscle strength but only increase in weight due to retention of liquids." I have seen repeated cases both in football and track and field that athletes have gained strength and increased their performance through use of anabolic steroids.

Many of the research reports that I have read that tested increased performance through use of anabolic steroids used untrained subject for their studies. I have doubts whether one can assume that the results of these tests can be applied against trained athletes. Well trained athletes are very sensitive to new variables introduced into their training routine and I have personally watched athletes through use of anabolic steriods and amphetamines progress from average college athletes to world class competitors in short periods of time. I feel that this statement is not an exaggeration since I trained in Los Angeles daily for four years with these individuals I am referring to and have daily records of my own training. One 1959 experiment studied amphetamine effects on performance of swimmers, runners, and weightlifters and concluded: "This study has shown that the performance of highly trained athletes, of the classes studied, can be significantly improved in the majority of cases (about 75%) by the administration of amphetamines." (From Weiss, B. Enhancement of performance by amphetamine-like drugs. In Sjogvist, F. and Tottie, M. editors. Abuse of central stimulants, New York, 1969, The Roven Press, p. 57.

Probably one of the reasons that the NCAA and National Football League have recently put on a campaign against drugs is the awareness of athletes using counterculture drugs such as marijuana, cocaine and hallucinatory drugs. There was a recent survey conducted at Rutgers and it was found that ninety-five percent of the football team out of a sample of twenty-five used marijuana at least three times a week and used hallucinatory drugs once a month for several years. Most of the varsity athletes did not use these counterculture drugs during games. Many of the athletes of the one hundred and fifty pound football team at Rutgers smoked marijuana before and after practice. There was almost no use of anabolic steriods or amphetamines either by the Rutgers varsity or one hundred and fifty pound team. This can be compared against a survey done at the University of California at Berkeley in 1969 in which forty-eight percent took depressants, and twenty-six percent took pain killers, and twenty-eight percent took anabolic steriods. During that year, Ray Willsey, head football coach said that there was no drug problem at U.C. Berkeley. The big difference between the two schools is the emphasis on big time football and the intensity of competition. When the coaches job depends upon how the athletes perform and how often the athletes perform at this level the drug usage starts to be a major part of the athlete's life. These schools that are "big time" look to the pros as their model and what I can gather from recent personal interviews, the professional team and highly competitive athletes are vanguards for drug usage in athletes. Dr. Philip McFarland, head of the committee on the medical aspects of sport in California said efforts by the state medical body to stop the growing use of drugs have not been successful: "He added that one reason for the continuing rise in drug use is that collegiate scholastic players are influenced by pros.

For the professional team owners, by virtue of their vested interest in the performance of the team and the attendance at games, will only be concerned about drugs usage if the public becomes aware of the widespread usage and the image of the game is tarnished. I think it is naive to assume that the owners will act in the best interests of the athletes in any structural way. And besides some of the pro teams introduced drugs to the athletes, witness the Houston Ridge law suit. I suspect that any action by organizing sports bodies will be in the form of further demands on the athletes to stop drug usage with no real alleviation of the pressure on the athletes to perform. Coaches and owners reinforce a certain type of behavior that many times is chemically induced and as long as these pressures persist; i.e. to perform when injured or to perform predictably then the condition of the athletes will not change. In fact, the test necessary to predict chemicals in urine is quite sophisticated and difficult to conduct. The most dependable tests are not simple, since they involve gas chromatography and infrared spectrophotometry. At the Pan American games in Winnipeg in 1971 groups of technicians working around the clock could analyze only 20 urine samples in twenty-four hours.

Like in many areas in our society new ways to beat the system are devised once new precautions are taken. For example, the East German track and field team is reported to have devised a stimulant that can be inhaled and be out of the blood stream shortly after inhalation. The National Football League suggested drug testing for certain games and excluded testing during league championships or the super bowl. I suggest that spot check be run during the league championships and super bowl as is done at the Olympic trials and Olympic games in track and field.

A much more reasonable solution would be to have the team physician report to the players association rather than the management as is now done. Management pays the physician and this basic economic reality in who hires the physician should take precedence over naive idealism that says that we must rely upon the good will of the individuals concerned for "proper conduct". On a much larger scale, one must look to the major influences which lead to drug usage among athletes. This can best be seen by the demand for order and control by the team management and coaches and the coercive power techniques used by the coaches and the resultant alienation by the athletes. This is also demonstrated by the recent publications by athletes like Dave Megayesy's "Out of Their League", Gary Shaw's "Meat on the Hoof", Bernie Parrish's "They Call It a Game", and Harry Edwards' "The Revolt of the Black Athlete".

One might typify most of the team structures as highly authoritarian, rigid rules, decisions coming from the top, low involvement by athletes in the decisions and, of course, high incidence of drug usage. This phenomenon can also be seen in factories which operate on the same system with recent increase in amphetamines by factory workers. As Henry Edwards pointed out in The Sociology of Sport, athletics is a neutral act in itself. But in highly competitive athletics, the quality of its game is not judged by the process, but the process is defined by a set of rules that reinforce certain societal values. This can best be seen by the emphasis on winning or the score rather than the process. I experienced this myself—that highly competitive athletics if done under the present oppressive structure leaves very little room for other types of human expression of self-definition. One could argue that the athletes freely participate in this system and it is an individual choice to participate or not to participate. There is no evidence that this structure does make athletes perform better and the professional teams or Olympic team serves as a model for colleges or high schools. Of course, the mass media serves as a mechanism for the creation of consumer demand for the sport to sell products and the athletes are socialized into a system that reinforces certain dominant value; i.e. obedience to rules, predictability of human behavior, hard work and an acquiescence to decisions that affect ones own life.

Just as the team structure of the team is pyramidal so too is the total system model in society of sport. One aspires to make it to the top of the professionals the only problem is that the system only allows for a few winners with drop off points at grade school, high school and college for losers. This is a version that there is only so much happiness to go around with few winners and many losers; the only problem is that winners are restricted in their mode of expansion. They have little real power in the decisions that affect their life and are depreciated as capital and need drugs to continue staying on top. From a societal view, this sets a dominant ethos in the type of physical activities offered—a few participating and many watching. Look at the budget of most universities for physical activities. Intercollegiate athletics has very little to do with learning, but is more like a business within a public institution. Although the private sector does not necessarily respond to issues such as the quality of life for its citizens, I think the public sector must look to ways that promote the quality of life especially for physical activities.

But the government has its own interests. Witness the CIA involvement with the National Student Association in 1965. I was one of the managers of the U.S. team, which traveled to Budapest, Hungary for the World University Games. We had representatives from the government on the trip and I was constantly impressed with the need to pressure the athletes to win so that we could beat the "Commies". I could not ignore these comments, since the trip was partially financed by the government. Being on the U.S. Olympic Team I can attest to the subtle political pressures to win for the country and the only medal worth winning was the Gold Medal. Implicit in this value is the assumption that the world has one winner and all the rest losers in each event. This type of pressure leads toward drug abuse as clearly as the need for the coach to win to retain his job.

External influences such as political or economic pressures influence the organizational structure of sport and emphasize a value that does not necessarily relate to the individual experience of the athlete. The structure is pyramidal and so is the value of "being on top".

The sole benefit that I received from athletics, and it was not the quality of interaction within that system or the values of the system, is my own personal gratification and expression. Certainly, one cannot make equations between learning how to succeed in sports and how to succeed in life. Life and the environment is very complex and the assumption and structure that are dominant in sport do not equip one to respond to ambiguity or a complex environment; competitive sport has a view of the world that has limited boundaries. When the process becomes subordinated to an end result such as demonstrated in the Watergate hearing and is highly authoritarian then the quality of human life suffers.

Recognizing that the National Collegiate Athletic Association and Amateur Athletic Union are archaic there have been proposals for a new type of organization such as a Sports Council as suggested by Senator John Tunney. But this will not be an answer unless somehow within the structure there is an incorporation to a more open system that lets athletes participate in decisions that affect their lives. If the council becomes a political tool to "prove" the value of our system as against other "systems", then individual expression again becomes a thing that is difficult to experience and becomes subordinate to an external value placed on the physical act that has nothing to do with that act. And, as we are experiencing today the nation is influenced to become watchers, not participants, to become vicariously involved and forfeiting their right to physical self-definition. Of course, this means creating opportunities for more people to participate and de-emphasizing the super athlete who enacts on the field the virtues of obedience to rules, hard work, predictability of human emotion and the value of winning at all costs.

I would like to summarize some of my general comments in the form of some statements about athletics and drugs.

ETHNICAL CONSIDERATION OF DRUG USAGE

An ethical decision looks to the individual for moral judgement as if the individuals within the structure can counteract prevailing forces to stop drug usage. The central issues to me are the health dangers of drugs and possible psychological dangers from taking amphetamines and anabolic steriods as demonstrated by research reports, plus the classification of major relationships that cause drug usage, namely an excessive emphasis on winning because of economic or political reasons. Some of the current policies seem to be directed toward counterculture drugs such as marijuana and hallucinatory drugs.

POSSIBLE SUGGESTIONS AND RECOMMENDATIONS

The proposed Sports Council should be structured to include more than just token athlete participation in the decision process and the board members should not have economic interests in sport or an elitist philosophy that calls for the participation of a few to the exclusion of many.

Punish the management with fines if there is drug usage, and the management continues to do nothing about the problem. Apply the same standard to athletic teams as you do to other groups, i.e. illegal possession of prescription drugs without prescription.

EXTENT OF DRUG USAGE

There seems to be evidence that usage is on the rise, especially among highly specialized competitive teams with management structures that insulate them from close interaction with the team. In other words, athletes are treated as performing units with little individual consideration (I am speaking here not of a rhetorical concern, but a concrete process that considers the individual participation in more than just on the field performance). Characteristics are the heavy emphasis on winning and high authoritarian involvement by the management. These highly specialized teams include professional university and high school with the professional teams acting as models for those other teams that channel athletes up to the professional ranks.

CURRENT POLICY AND GUIDELINES

The current policy and guidelines are confusing since, according to economic interests, the management has different interests that prohibit in any concrete way, concern for the athlete other than he or she performing consistently and at a high level. The guidelines from the medical profession are confusing.

Organizations that emphasize winning at all costs in order to make money can not be looked upon for leadership in this area.

Athletes should not be exempt from normal investigation into illegal use of drugs that are not prescribed by doctors. Conduct spot checks for drug usage in major competitions such as National Championship or league championships.

Team physicians should report to interest groups that are closer to the interests of the athletes. For example, in professional sports, this means reporting to the players association. In universities it means reporting to student government or faculty groups.

Senator BAYH. Our next witness is Mr. Jack Scott, the athletic director and chairman of the physical education department, Oberlin College and Director of the Institute for the Study of Sports and Society.

STATEMENT OF JACK SCOTT, ATHLETIC DIRECTOR AND CHAIRMAN OF THE PHYSICAL EDUCATION DEPARTMENT, OBERLIN COLLEGE, DIRECTOR OF THE INSTITUTE FOR THE STUDY OF SPORTS AND SOCIETY

Senator BAYH. Mr. Scott, we appreciate your being with us.

Mr. SCOTT. Thank you.

Senator BAYH. We will put your biographical statement in the record.

[The biographical data is as follows:]

BIOGRAPHICAL SKETCH OF JACK SCOTT

Present position: Chairman and Athletic Director, Department of Physical Education, Oberlin College, Oberlin, Ohio.

Education: A.B., Syracuse University, 1966. Ph.D., University of California at Berkeley, 1970.

Publications: Author of two books: *Athletics for Athletes* and *The Athletic Revolution*. Published over 50 articles in magazines and journals.

Founder and former Director of the Institute for the Study of Sport and Society.

Doing Research in preparation for a book on drugs in sport for the past 2½ years. Have published articles on drugs and sports in the *New York Times Sunday Magazine*, various educational journals, and over 35 newspapers.

I attended college on an athletic scholarship at Stanford University and also participated in intercollegiate athletics while at Syracuse University.

Besides my administrative titles, I am an Associate Professor of Physical Education and an Assistant Football Coach at Oberlin College.

Mr. SCOTT. I don't have a typed prepared statement, but I do have some rather extensive notes. If you would like me to go over this, it would take approximately 15 minutes or so to hit some of the highlights and I would be more than happy to respond then to you or other members of the committee on any questions that you may have.

The first time that I was introduced to drugs as an athlete, I was a high school senior in Syracuse, N.Y., and because of some of the football and track and field events that I was participating in, I was recruited by a number of colleges throughout the United States. On a recruiting visit to a prominent athletic school in the South, was the first time I learned athletes used drugs. In some of my testimony, I will intentionally not mention the names of certain organizations, individuals, or schools that are involved. The reason for this is that I believe that the extensive use of drugs in sports is so prevalent that it would be unfair to the few individuals whom I have personal knowledge of or organizations that I have personal knowledge of. Except in cases where it has already been placed on the public record, I will omit their names. I say I believe the extensive use of drugs is so wide that to pinpoint one or two individual organizations would be unfair to them.

In the winter of 1959, as a high school athlete, I was flown to a Southern college as part of their recruitment process in an effort to attract my attention to that college. When I arrived there I was very ill with a bad cold and the team trainer offered me some drugs which one of the athletes I met or the college's team identified as some form of amphetamine. The 2 days that I was there, I was able to function quite well despite my cold. After 2 days of using these drugs, I was rather ill. In talking with various athletes at the school, they informed me this was a common practice of the track team at this school to use this drug.

Now, I am not sure what kind of amphetamine it was, but this was back in 1959. A few years later, in 1963, I was attending Stanford University and I was on an athletic scholarship. At Stanford, one of my training partners was a young man who later went on to gain an Olympic gold medal while representing the United States and today is probably one of the most famous Olympic athletes here in the United States. At the time when I was very close to this individual, he showed me a number of amphetamines that he had, and at that time, except with my previous experience from 3 or 4 years previous, I had no familiarity with drugs between or during that 3- or 4-year period. I was curious and asked him if I could have one because I had no idea what the effect would be and I was interested in going to a small amateur track meet to see what would happen to my performance after using the drug. This person told me that it would just be a waste to use the pills on a small amateur meet. He said I should save the pill for very important meets—something where I was representing my college, or some kind of national competition. I was very curious but I think many athletes are as to whether or not this drug would actually help them.

This individual, he told me, you don't waste a drug like that on a small all-comers meeting, you save it for the time when it will be very important, when it would be helpful to you, not only to you in the competition, but say if you are trying to gain an international championship, compete in international athletic competition, this would be of much benefit for you.

Now, this individual was just beginning to develop into a national and international level athlete. He had two problems that I ascertained as an athlete. One was lack of confidence. Anyone familiar with athletics knows that one of the most important things in athletic competition is your ability to maintain your composure under pressure. This friend of mine had the reputation of not being able to do that. Shortly after he began to use amphetamines, various brands, one of the things that they did, I am not sure if they stimulated his performance physically, in the sense that it allowed him to run a mile say in 4 minutes and 5 seconds rather than 4 minutes and 10 seconds, but the thing that I know that it did, and he knows that it did, it gave him confidence to perform up to his maximum ability.

In other words, by using amphetamines, he was able to withstand competition which he had extreme difficulty in doing before.

The other problem he had, he was built rather fragiley, and in events he was attempting to compete in, strength and size were very important. The way I can describe this individual, I knew him in 1963, he was sort of built like an Irish Setter. He was strong and fast and thin. I left and I came back 2 years later after he used anabolic steroids quite extensively, and he was built like a bulldog. His entire physique literally had changed because of the extensive use of anabolic steroids during that period of time.

Now, as I believe Mr. Shinnick pointed out, athletes aren't using these drugs as a shortcut to success, in fact, it is often quite the opposite. They are using these drugs so that they can train much harder than they otherwise would be able to naturally. In order to get a proper understanding of this, I think much of the popular literature that you read in the sports pages or something like that, that would give the impression that individuals are using these drugs as a short cut to success. It is only losers who use the drugs is something that we frequently hear and nothing could be further really from the truth if you look at it in its totality. Now, of course, as many individuals stated from various sport organizations, from the NCAA to the NFL, more losers use drugs than winners because in any competition there is only one winner, and many losers and if the majority of people are using these drugs, it is going to come out and so there is a very peculiar truth to the fact that losers use drugs in preponderance to winners.

Senator BAYH. May I ask whether your friend, who I am familiar with, and I will respect your confidence, and his, he was under a doctor's care while he was using these amphetamines and steroids?

Mr. SCOTT. To my knowledge, when he was using the amphetamines at that time, I knew him in 1963, he was not under a doctor's care for taking them. It is my understanding originally he secured them from a doctor. He was having to compete in a major athletic competition and he had a bad cold and the doctor gave him a number of these pills, so he could fulfill his obligations to the meet promotor—the guy who had flown him from California to New York and to compete under those circumstances. He felt an obligation and he was given a quantity of them and saved them to use on other occasions. I have heard at times he had used anabolic steroids and that they were under a doctor's prescription. Other times I have heard they weren't.

Senator BAYH. As far as this one individual is concerned, was he under a doctor's care while he was using anabolic steroids over this 2-year period?

Mr. SCOTT. As I say I cannot be certain, I think originally when he first secured these drugs for the first time, he did seem to secure them from a physician. There were many physicians that were associated with athletics that do not seem to be very reluctant to supply athletes with these drugs.

Mr. FONG. You were introduced to amphetamines by the coach?

Mr. SCOTT. No; the first time was by a trainer at a college when I was a high school athlete being recruited by various colleges and I was flown to this college, and I was there and they could see that I was obviously sick and they wanted me to have a good time while I was at the college.

Mr. FONG. Would you say most of the athletes who are introduced to amphetamines have been introduced by trainers or by doctors or themselves picking it up?

Mr. SCOTT. It has been my experience and in participating in college and high school athletics, either as an athlete, athletic director, or as a coach, since 1956, that these drugs were first introduced into the athletic world in an extensive and systematic fashion by both team physician and trainers.

Today, I believe the situation is somewhat different. This is because of hearings like this, other hearings that have been going on in the past, that have focused extensive publicity on this subject and I think it has changed slightly. I think, however, that their is documented, evidence that these drugs were first introduced in an extensive and widespread fashion by the professional organizations.

Mr. FONG. Thank you.

Mr. SCOTT. One thing before I go any further, I would like to make clear, I am offering this testimony not as a medical expert, I have relatively little knowledge in the particular medical aspects of these drugs other than a layman's point. Most of my experience comes from being an athlete, a social scientist, a coach for the past 2 years and I am preparing a book now on drugs and both myself and the staff at the Institute for the Study of Sports and Society, we have conducted rather extensive and exhaustive investigations.

Senator BAYH. When will that book be coming out. When will it be available, Mr. Scott?

Mr. SCOTT. I hope within the next year, and what I am going to try to do——

Senator BAYH. I hope you will send a copy to me. I will pay for it personally.

Mr. SCOTT. Fine, OK. What I would like to do first here is briefly discuss and perhaps comment on a few incidents of drug uses in athletics that Mr. Shinnick discussed, and I won't go into this to any great extant, but it is my understanding that other witnesses before the committee will be able to speak on this with firsthand experience as with regard to their own involvement of drug usage. After briefly touching on a few well-known incidents of drug abuse, I would like to talk about the complexity of the problem, particularly the difficulty in gathering reliable data in this area.

I would also like to point out another reason for the complexity of the problem is that today especially, there is no such thing going on, at least to my knowledge, of anyone actually forcing athletes to take drugs. Perhaps that may have been the case in the past, but today it is probably somewhat more complex than that athletes were being directly forced to take drugs, the solution would be rather simple.

I will conclude my testimony with what I feel has been a coverup attempt on the part of the professional sports organizations of this country in their efforts to deal with the drug problem. As I believe Mr. Shinnick pointed out, Dr. Tom Waddell, a physician and a member of the 1968 U.S. Olympic team claimed that one-third of the U.S. track and field team in 1968 was using anabolic steroids while preparing for the 1968 Olympic games.

When he said one-third of the team was using steroids, that information is even more significant than you may realize, because there are only about one-third of the members of the U.S. Olympic track team who would have anything to gain by using anabolic steroids. A person who has to run a 6-mile race surely doesn't wan't to gain 50 or 60 pounds, whereas a shotputter or discus thrower might. So when Dr. Waddell, who besides being a physician at the time that he was on the team as a decathalate, claims approximately one-third of the U.S. Olympic team in the 1968 preparations for the game were using anabolic steroids I believe we have a reliable source. I printed that statement by Dr. Waddell in an article I wrote for the New York Times Sunday Magazine. It was refuted later by Dr. Hanley of the U.S. Olympic Committee and Dr. Hanley made the following comment:

> One inaccurate and unsubstantiated report carried in some newspaper charged that as many as one-third of the members of the United States Olympic Team used drugs during the 1969 Olympics. That is plain nonsense. A total of 468 athletes were tested during the competition without finding a single case of drug usage.

What Dr. Hanley states is true, the only thing here is that he wasn't responding to my statement. First of all, I referred to the U.S. Olympic track and field team specifically, not the U.S. Olympic team. There is obviously quite a bit of difference.

Another thing that Dr. Hanley refuses to point out is that there is no test, and there was no testing in 1968 at the Olympic games for the use of anabolic steroids.

The kind of testing that went on at the U.S. Olympic games in Mexico City was primarily for amphetamines and similar drugs——

Senator BAYH. What was your own sport, Mr. Scott.

Mr. Scott. My own sport in college was track and field.

Senator Bayh. Track and field. I just wanted to get your general experience, as I asked Mr. Shinnick. I am a sandlot baseball player and love all sorts of sports. I really didn't know anyone who had the kind of experience that you had getting to the top of the mountain so to speak. We had some significant but conflicting testimony about the benefits to be derived from the use of amphetamines and steroids.

You mentioned your friend taking the amphetamines, perhaps that didn't improve his capacity to perform, but removed the psychological concerns and helped him to relax. What has been your experience?

Mr. Scott. I personally have not used any amphetamines, in order to facilitate my athletic performance, although at times as a writer I have thought about it when I have had deadlines.

Senator Bayh. How about steroids?

Mr. Scott. I have not used steroids, I can't testify from personal experience.

Senator Bayh. You testified about the experiences of others close to you. Can you testify as to whether they really benefit or not?

Mr. Scott. I can testify that of many athletes who have used steroids that I have known, about every 9 out of 10 of them would claim the steroids definitely helped them. One of the problems with many of the medical studies in relation to the steroids, that are done to see if they can actually improve performance and increase strength, is that these studies obviously have to have some kind of medical authorization. I think it is next to impossible to get the dosage of steroids that athletes are taking approved for experimental purpose on humans—even prisoners! So when studies are done perhaps by some medical organization, they will use the recommended dosage that it says on the label. While athletes use anywhere from 5 to 10 times that dosage and so I think most of the studies that try to claim that steroids only help athletes absorb water, don't direct themselves to the real issue. The dosages that are being given in the studies in an attempt to determine whether steroids can improve performance are not the dosages that athletes are using on a regular basis.

Senator Bayh. Your friend who accomplished greatness, you said he looked like a bulldog. This is muscle instead of fat?

Mr. Scott. Correct.

Senator Bayh. What happened to him after he stopped using the steroids? Do you know?

Mr. Scott. I have never actually sat down and talked to him about any of the possibilities of side effects. In the literature on this, I believe some of which is now available to your committee and I would be happy to submit a copy of my article from the New York magazine that talks about possible side effects of the steroids.

Senator Bayh. How about as far as his physical appearance, his physique, did he go back to an Irish setter or does he just look like a worn-out bulldog or did he maintain his bulldog appearance?

Mr. Scott. I would say he is looking like a golden retriever about now.

Senator Bayh. Oh course it happens to all of us.

Mr. Scott. Right, I am certainly not blaming it on the steroids, I think it is very important——

Senator BAYH. Of course, I am not meaning anything derogatory about golden retrievers.

Mr. SCOTT. Right. I think it is important, I think the reason Dr. Hanley's statement is that people have come forth from the professional sporting organizations of this country in an attempt to contradict information that is given out about the extensive use of various drugs and when Dr. Hanley points out there was testing and they found nothing, it is irrelevant because the testing was not designed to test for the use of anabolic steroids. Athletes, as Mr. Shinnick pointed out, do not take anabolic steroids a day or 2 or 3 days before a meet, that is something they do 2 or 3 months before the competition. There was extensive testing for amphetamines and it is true that now relatively few cases of amphetamine usage have been found in recent years.

Senator BAYH. I am trying to get a clear picture. We're talking about the use of steroids to build up strength and muscle in those sports that require great strength. I can see how that can be stopped in advance so that one might escape testing. You say in 1968 Olympics there were no tests for anabolic steroids.

Mr. SCOTT. That's right.

Senator BAYH. I see, if there had been you could take yourself off and you wouldn't automatically lose your muscles, they would still be there.

Mr. SCOTT. That is accurate.

Senator BAYH. But if you are using amphetamines, whether to soup up your physical capacity which is doubtful from the evidence we have had, or to remove certain psychological roadlocks, I don't see how it helps you to become accustomed to these drugs when you are not going to be able to use them in competition.

Mr. SCOTT. There are two answers to that.

First of all, testing for amphetamines is relatively new. It has not been going on that long and it still does not apply in most places. For e.g., there is no testing in college or professional football, basketball or baseball. Many athletes use amphetamines during their training sessions and the reason they do this is that in practice they want to simulate actual competitive conditions. In other words, if you are practicing a particular athletic technique and you want to set a condition or have a set of conditions, you enter competition and you are stimulated to a higher degree, the techniques you learned in practice might not be applicable to the competitive extremes. Many athletes that I have talked with feel that under the stress of international competition that they perhaps don't need amphetamines, that they can get a natural high, they can get a natural rush from the competition. Where in practice, it is impossible to actually get themselves in this state, but yet to simulate almost identically the conditions under which they compete, the athletes have begun using amphetamines in practice and this is one of the ways that they have circumvented the problem where they have actual amphetamine testing on the day of competition. At least athletes oftentimes will be using then, and in fact, I think this is much more dangerous because athletes practice much more frequently than they compete.

They may not use them on Saturday but they do use them for three or four practice seasons each week.

Senator BAYH. When you say amphetamines, is there an average dose?

Mr. SCOTT. No, I would say that my understanding from talking with athletes that have used them, you do develop a dosage you have to use, it will, you know, increase over a period of time.

Senator BAYH. Give us some idea. You mentioned anabolic steroids were being used five to ten times over the label requirements or safeguards limitations. What are we talking about, 1, 10, 20 pills?

Mr. SCOTT. Of amphetamines?

Senator BAYH. Yes.

Mr. SCOTT. I don't think we can talk, and I am not familiar with medical information on this, we can't talk about the number of pills because I believe that I have seen amphetamines come in various sizes and it is quite possible that one pill could be much more powerful than 10 small ones. At least that is the understanding that I have.

Senator BAYH. The average pill is about 5 milligrams?

Mr. SCOTT. That seems reasonable, I have never sat down with an athlete and talked about actual dosage that they have been taking. All I know, athletes have complained to me they do experience a problem in that the longer they take drugs, such as amphetamines, the more they have to increase the dosage.

Senator BAYH. This committee several years ago started urging control on amphetamine production. Last year it was cut 80 percent. This year we're going to cut it back another significant percentage. Ultimately, we will have a cut 1971 production by in excess of 90 percent. This wasn't directed at amateur or professional athletes, it was directed at pushers on the street. We became familiar with the dependence quality and, the violent reactions initiated, the psychosis, the speed freaks and so forth. In addition to the ethical issues, when you have athletes taking anabolic steroids or amphetamines, I am worried about the minds and bodies of these young athletes. Whether they are falling into this habit. That is why quantity, how many pills they take on the average, one pill a day, or more is important. You pointed out from your experiences with athletes, which is typical of drug abusers in general, that after so long you acquire a tolerance and you increase the dosage. To what extent has this occurred with athletes? Does it progress to the point that the athletes have real addiction problems?

Mr. SCOTT. I know of the case that Mr. Shinnick pointed out, the individual who used amphetamines for over a 2 year period and he did go through personality changes, and he went through barbituates and so forth and when he was coming down off amphetamines, I talked with the athletes who have experienced similar problems, I did not have any firsthand knowledge of athletes actually becoming addicted.

Senator BAYH. Do you have firsthand knowledge of how many pills various athletes have been using? Do you have any absolute figures?

Mr. **Scott**. The only firsthand knowledge that I have is that athletes who've used amphetamines over a long period of time have to continually increase the dosage that they take to achieve the same effect.

Senator **Bayh**. But do they increase from 1 to 5 to 6, 10 to 11? I just don't have any idea what range we're talking about. Could you help us out on that?

Mr. **Scott**. No, I would have to guess, I would not like to try to be specific on that point.

Senator **Bayh**. Mr. Shinnick, if you are still here, do you care to say what range we might be talking about?

Mr. **Shinnick**. I talked to this gentleman that we're addressing ourselves to, the one that took the amphetamines for over 2 years, and he told me he went up to 3 pills, 3 amphetamines, that is what he told me.

Senator **Bayh**. That is every day.

Mr. **Shinnick**. Yes.

Senator **Bayh**. Through practice sessions?

Mr. **Shinnick**. Yes.

Senator **Bayh**. Do we know what size they are, 15 milligrams or may I—I don't want to play games with numbers, but there are various size pills.

Mr. **Shinnick**. You said 15 milligrams?

Senator **Bayh**. There are several sizes, aren't there? The normal size is 5 mg. or 10 mg. and they go as high as 15 mg.

Mr. **Shinnick**. No, I don't know.

Senator **Bayh**. All right.

Senator **Fong**. Mr. Scott, do you know of any of your friends that became dependent on amphetamines after their career?

Mr. **Scott**. No; I personally don't know of anyone that became addicted in the traditional sense, that they became addicted in the sense that they found it extremely difficult without using amphetamines. I do not know of any athletes in particular in the traditional sense that have experienced severe medical problems. What problems there individuals might experience 5 or 10 years after their career or over only time will tell.

Now, at the 1968 U.S. Olympics Training Camp for the track team which was held at South Lake Tahoe, Dr. H. K. Dooley, one of the physicians, in charge of medical services in the July 23, 1969 Sports Illustrated, Dr. Dooley, made the following statement:

> I don't think it is impossible for a weight man to compete internationally without using anabolic steroids. All the weight men on the Olympic team have to take steroids, otherwise they would not have been in the running.

Now, that is from a man that was a physician, one of the physicians who was in charge of the medical service for the U.S. training camp at South Lake Tahoe in 1968.

At the same time, you have an individual making that kind of statement, you have a man like Mr. Robert Gigengeak, who is a former head coach of the U.S. Olympic Team, claiming, as he personally told me, that he does not know of one case of a U.S. Olympic athlete using any kind of drugs to help his performance.

There are the two kinds of contradictory information that I am sure as you go through your hearings continually will crop up and part of the problem can be resolved, and what the truth may be, whether it lies somewhere between these two, one or the other are correct, I personally now happen to agree with Dr. Dooley in terms of the extensive use of drugs.

There was an AP story 2 years ago that was on the wire services where Bill Staley, of the Chicago Bears football players pointed out that one of his teammates received 17 shots of pain killer before a football game and not too surprisingly passed out after the game.

Not too many years ago, the New York Jets, according to a star player from the Jets, had a very serious incident with regard to the use of amphetamines. What had happened was that a player had taken, according to this now former New York Jet, a number of amphetamines to prepare himself for the game. He was injured during the game and as often is the case today he was operated on shortly after the game. Apparently, sometimes, depending on the injury, the quicker an injury is operated on the greater chances are for recovery of the particular area of his body that was injured. This athlete did not fully admit the rather extensive dosage of amphetamines that he had taken. When he was operated on, the amphetamines had some kind of reaction with the anasthetic and he almost died according to the individual who related this story to me. He was a teammate of his at the time.

I think we're all probably rather familiar with Houston Ridge's $1.25 million dollar suit against the San Diego Chargers. One of the things that Mr. Ridge, a former player for the San Diego Chargers alleged in his suit was an allegation that anabolic steroids and amphetamines, and barbiturates were given not for the purpose of treatment and care, but for the purpose of stimulating his mind and body so that he would perform more violently as a professional player. One of the things that Mr. Ridge explained at that time was that he had a very serious hip injury and it was diagnosed by his team as a hip pointer. A hip pointer, if you are familiar with that, is a very painful injury but it is possible to play, if you can, you know, grit your teeth as the coaches would say. Mr. Ridge attempted to grit his teeth, now he claims with the help of some novocaine, and he tried to play for a number of weeks. Finally, and now, Mr. Ridge claims, the team had the hip X-rayed after 2 or 3 weeks of going through this process of trying to play and it was discovered that he had a fractured hip.

Mr. Ridge, again as I believe many of you know, in the last few weeks settled his suit out of court for a very significant sum of money.

Paul Lowe, another member of the San Diego Chargers, testified before the California State Legislature in 1970 about the case of anabolic steroids on the San Diego team. According to Mr. Lowe, not only were the players encouraged to take them, but steroid pills were actually placed on the training table and according to Mr. Lowe's testimony, before the California Legislature, there was an implicit threat of a fine if the players refused to take these pills.

It was only after some of the players asked their own family physicians what these pills were that the pills were removed.

The records that were subpenaed by the California State Legislature at that time showed that the San Diego Chargers organization was ordering massive quantities of amphetamines. The amphetamines were ordered by the Chargers organization themselves.

While teaching at the University of California, one of the students in my class who was a football player made a study of the use of amphetamines at the University of California, the football team, and approximately 1 out of every 2 players was using amphetamines to help their performance. According to players on the team, the use of amphetamines by teams whom they participated against, was even more extensive than at the University of California at Berkeley.

Some of you may recall a Super Bowl game not too many years ago when the Baltimore Colts won the Super Bowl championship when Jim O'Brien kicked a field goal in the closing seconds. In the first half of that game, John Unitas received a very severe injury to his ribs and did not return to the game in the second half. He was interviewed on a post-game national television show and the commentator who was interviewing Mr. Unitas asked him if he had been needed in the second half would he have been able to go back in? Much to the consternation, I believe, of many National Football League officials, Mr. Unitas said, yes, that he had been shot up and he couldn't feel a thing. He would have been able to go back in if the team needed him.

A man by the name of Mr. Ken Patera, who participated in the last U.S. Olympic Games in the super heavyweight division, made a comment that was reported in a Sports Illustrated that shortly before the Munich game, Mr. Patera made this comment:

> Last year (he was referring to the Russian champion that he was going to have to compete against). Last year the only difference between me and him, was that I couldn't afford his drug bill. Now, I can and when I get to Munich next year I will weigh in about 340, maybe 350, and then we will see which are better, his steroids or mine.

Well, if we are to take Mr. Patera's comments literally, we did discover that Russia's steroids were better!

In the 1968 Olympic Trials, another incident occurred from a slightly different perspective. It has been my experience, particularly in track and field, that athletes are oftentimes so involved in using drugs that occasionally they get their drugs mixed up. One athlete who was participating in the high hurdles began taking some pills a couple of hours before competition. Now, he gradually, as the competition approached, became more and more lackadaisical and got nervous and he took what he thought was another amphetamine. Finally, as the competition approached, he was just not in the frame of mind that he felt the amphetamines should have him in and finally at that point, too late, discovered that he was taking one of his downers instead of one of the amphetamines, and the young man who had the potential possibly to have secured a place on the 1968 Olympic Teams lost that opportunity because he had mixed up which drugs he had been taking.

I won't go on any further, I think that you have some feel for this, because I have referred to incidents both in professional and amateur athletics about the extent of the drug usage. If you would like, there are four references I can give you for the record. The finest series of articles on drug usage in athletics today has been done by Mr. Bill Gilbert of Sports Illustrated. His series appeared in three separate issues from June 23 to July 7, 1969.

There is a reference in a book called The Hole Truth, that is The H-o-l-e, The Hole Truth by Tommy Bolt, a golfer, where he talks about drug usage in golf. Another book which deals quite extensively in drug usage in professional football is Dave Meggyesy's book, Out of Their League, and I also referred to my article in the New York Times Sunday Magazine of October 17, 1971.

The contents of one last book by another professional football player, Fran Tarkington, are worth considering. In Broken Patterns, Mr. Tarkington (who takes a rather conservative outlook compared to some of the other individuals I have mentioned) attempts to justify the use of these drugs. Mr. Tarkington, who is an offensive player, makes the statement that mostly defensive players use these drugs. He points out that, unlike counter-culture people who supposedly use drugs for pleasure and mind expansion—professional athletes are using the drugs to make themselves more efficient football players and Mr. Tarkington, to my knowledge, is one of the few professional athletes of almost unquestionable stature who does frankly admit to the use of the drugs and does offer a rationale and explanation and tries to justify the use of these drugs in professionalized athletics.

Not too surprisingly, given the extent of the drug usage, many people involved in sports, not people just standing on the sidelines, have shown a tremendous amount of concern about this problem. One such individual is Dr. Robert Kerlan, team physician for the Los Angeles Lakers and Sandy Koufax's personal physician who kept Mr. Koufax pitching for a number of years despite the arthritic condition in his arm. Dr. Kerlan made this statement: "Somebody should speak out on the subject and speak out strongly. The situations arise where valid medical reasons are given for prescribing drugs for athletes. However, the excessive and secret use of drugs is likely to become a major athletic scandal."

As I believe Mr. Shinnick pointed out, Tom Ecker, who is one of the most well-known track and field coaches in the United States and the author of six books mentioned not long ago, that "Today is a great rarity for someone to achieve athletic success who doesn't take drugs. I assume that the winner of a sport contest is one who has a pharmacist."

Now, I personally think that Mr. Ecker's comments are somewhat exaggerated if he means all sports and all events. That is not all sports and events because the athletes in some events do not necessarily profit from taking drugs, but if Mr. Ecker is restricting his comments to those areas where athletes can profit from using drugs, I think he is pretty close to the truth. I totally agree with the comments of Dr. Kerlan.

Now, the question comes, and this is the most serious one that we have to face, is how do you gather reliable data in this area? I am sure you will have witnesses coming before this committee who will—some will cooperate and others, who will practically deny everything that I have told you. The question that I raise, as I found in gathering research for the last 2 years, how do you go about doing this? Do you go to Mr. Pete Rosell, the Commissioner of the National Football League, who is in charge of merchandising a multimillion dollar business and ask him if there is drug abuse in professional football? I think we all understand what his response would be and on many occasions what his response has been. Do you go to Walter Byers, the head of the National Collegiate Athletic Association, another multimillion dollar business, and ask him if there is extensive drug use? It is extremely difficult to get athletes to come before committees like this and testify, because athletes are now putting on the line their entire athletic career, given certain restrictions today against the use of drugs if they come here before you and acknowledge that they have used drugs. Many colleges are extremely reluctant to admit that their athletes are using drugs because it often happens and in fact this happened at the University of California, when the survey that was done there by the football player, showed extensive use of amphetamines.

Other schools attempting to recruit athletes wanted this information with the parents of athletes that they were trying to recruit away from California.

So the attitude of insiders, athletic directors like myself, now usually, is to deny any charges of drug usage for fear that their admission could be used against them and their schools.

It is next to impossible to get reliable information. About the best way you can get it is from certain team physicians such as Dr. Kerlan and other physicians who have spoken out and athletes who have recently retired because it is simply impossible, in my opinion to ask NCAA officials. The NCAA recently sent out a survey that they wanted to do to ascertain the use of drugs in college athletics. As a college athletic director, I received several hundred copies of the questionnaire. I was supposed to distribute them to the athletes, they were supposed to fill them out as to whether or not they use drugs and send it back into the NCAA. It is nonsense, it is a waste of money because college athletes are not going to fill this out honestly in most cases. They are not going to be a part of such trivialities, any realistic person that is the least familiar with the situation knows that viable data is not going to be gathered in such a manner.

If you would like, later in my questioning, I will respond to some of the pressures that athletes feel on them in order to take drugs, I will pass over that for now. Here is a quote from Dr. Donald Cooper——

Senator Bayh. Perhaps you could touch on that. We do have some rather significant legislation coming up on the floor.

Mr. Scott. I am closing in on that area now.

Senator Bayh. I have asked some questions already.

Mr. Scott. This statement came from Dr. Donald Cooper, an NCAA representative. Dr. Cooper is a physician and he made the following statement rather recently:

Today maybe coaches and trainers aren't going to athletes overtly with drugs, some are turning their backs when they have knowledge that their kids are using them.

Shortly after I published my article in the New York Times Sunday Magazine, a Chicago writer by the name of Jean Morris asked one of the Chicago Bear football players what would be the response if owners and managers of the Chicago Bears caught one of their players with some kind of marijuana, a joint of marijuana in the locker room. The player suggested that perhaps it could mean an immediate expulsion from the team, if not from the league. Now, he asked the same player what would happen if they were caught with some amphetamines. He said well, now, probably nothing. There would be little or no concern about it.

So you begin to see that when the professional organizations, and by professional I include the NCAA, they seem to have a different standard, depending on the kind of drug that we're talking about.

Now, I again am not a medical expert. But to my knowledge the medical complications of marijuana are somewhat less than amphetamine use.

Senator BAYH. Let me ask you this. You made a rather harsh analysis, maybe it is accurate, but I am not absolutely certain I understand what you are saying. Do you claim that organizations like the NFL and the NCAA, either condone or support or ignore those problems? This is not the impression that I get from watching the television set when the star athletes make a pretty good case for kids in the street: if you want to be a star safety or a linebacker or a tight end, you better not get that monkey on your back. Frankly, I watched these ads with a great deal of approval.

Mr. SCOTT. That is the concluding part of my statement, what I call the coverup. Beginning in 1968 and 1969 and 1970, there were increasing revelations about the extensive use of drugs in athletics to help athletes perform. The NCAA, the National Football League and Professional Baseball responded to this in a rather peculiar manner. The NCAA, in their official newsletter did a three-part series on drug usage. Most of their series dealt with LSD, opium and marijuana. I believe I at one time counted up the words and there were approximately 80,000 words on drug usage and the dangers of drug usage.

In this three-part series, next to nothing, very little dealt with the kinds of drugs that athletes were using.

Senator BAYH. I have not read that information with the great particularity that you made. Was it hashed over? Next to nothing? What specifically was in the article?

Mr. SCOTT. The thrust of the three-part series they did dealt with, it was done by a professor from the University of California at Berkeley, Dr. Harden Jones. He dealt with the dangers of LSD, heroin, marijuana and talked quite extensively about the evil influence of Tim Leary. As a coach and athletic director being concerned about the problem of drug usage in athletics, I found it rather peculiar and rather of little help to me because I did not find athletes using LSD, opium or marijuana to improve their athletic performance.

Senator BAYH. If indeed the assessment of drug problems generally and of anabolic steroids and amphetamines by athletes are both true; it seems to me that you are not making a realistic appraisal if all of these things are in fact going on.

I don't think we can say it is insignificant to have star athletes telling kids in the streets that they are not going to make it to the Super Bowl if they use these drugs, so they better not use LSD, heroin or marijuana.

Mr. SCOTT. I didn't say that it was insignificant, I called it a coverup of the problems of drug abuse that exist in athletics. The NCAA and NFL in 1970 and 1971 when there was a tremendous output of books and articles and other information revealing the extensive use of the drugs in athletics, it was in 1970 and 1971 when these commercials began appearing on television and the commercials quite inconspicuously did not deal with drug usage in athletics. Now, I would like to say, here for example, is a book that is put out by the office of the Commissioner of Baseball. The "Baseball vs. Drugs," and this is an education prevention program. There is not one mention of anabolic steroids in the entire booklet—one of the chief drugs athletes are using to help their performance. If you would like to look through the book or members of the committee, you will find extensive talk in here about opium, the opium poppy, codeine, heroin, morphine, marijuana, methadone, things like that which for people like myself who have to work in the world of athletics and are concerned with these problems, this kind of literature is not directed at us to give us information so we can deal in constructive fashion to combat drug abuses in athletic sports. It seems, as Professor Kaplan from the law school at Stanford University has pointed out, in the following comment:

> Any drug program using athletes is bound to be a failure, first of all, it is using hypocrites because athletes pop the pills like anybody else. Secondly, they have no expertise. They don't know what they are talking about and they only heighten the interest of young people in drugs. I think sports are patting themselves on the back. They're probably trying to combat the publicity about athletes using drugs.

Interestingly, about 1 year ago, representative Rogers from Florida was going to hold hearings which were going to inquire into drug abuse in athletics. At that time, Mr. Rogers aide informed me that the day the hearings were to begin they received a call from the White House requesting that the hearings be postponed because on that very same day that Mr. Rogers was supposed to begin conducting hearings inquiring into drug abuse in athletics, President Nixon was inviting the athletes who participated in these anti-drug commercials on TV to the White House to compliment them for their efforts in combating drug abuse.

Senator BAYH. I am not at all familiar with that, but I do know Congressman Rogers. I do know that he has been one of the most severe critics of the administration particularly in the area of health programs. It is hard for me to believe that he has been intimidated or persuaded not to hold hearings by a call from the White House. If you had seen him rake Eliot Richardson and other administration officials over the coals as I did, that would be a pretty hard one to buy.

Mr. SCOTT. The hearings have not been held. They were supposed to be held and perhaps he does not feel the matter is very significant. It is also worth noting that Mr. Nixon's call to Mr. Rogers was pre-Watergate.

Senator Bayh. I don't know why the hearings haven't been held. A claim that a call from the White House could intimidate that man is inconsistent with what I know about that man.

Mr. Scott. His assistant didn't claim that he was being intimidated of course, he just felt that he was being considerate. The President was inviting athletes to the White House who participated in the anti-drug program and they just asked as a kindness if perhaps the hearings could be delayed for a short period of time. Whatever the reason, the hearings that were scheduled have not been held todate.

In concluding my testimony, I think that Professor Kaplan summed up the situation perfectly. The drug programs of the NCAA and the National Football League are public relations programs. They are not programs designed to correct drug abuse, either in sports or in society at large. They are calculated, heavily financed programs, designed to take attention off themselves. In the meantime, they have helped to perpetuate this stereotype that drug problems are restricted to hippies, ghetto dwellers and other so-called undesirables. Drug usage and abuse in sports is a problem that all of us in athletics should be concerned with and the kind of approaches that have been used so far by responsible bodies governing athletics in this country have made no attempts to face up to the very real problems that coaches and athletic directors like myself throughout the country are faced with.

Senator Bayh. Mr. Scott, I appreciate your very frank testimony.

Let me ask one more question. We have had testimony from some of the organizations that you criticize, and others will be testifying. I will try to be just as critically stern with them to make sure they know what they are talking about.

Is it fair to say that if the NCAA and the professional leagues have not been helpful to you and others who deal with athletes and athletics; that this does not necessarily mean that they have not made a significant contribution as far as appealing to young people who may not get into the locker room of our large universities. I mean, the kids on the street. I have listened to these ads. It is impressive to me to see a guy who makes a touchdown say, you know, keep that monkey off your back. That appeals to a lot of young people that are not going to be at your school trying out for football teams or track.

Mr. Scott. I think, given the extensive revelations about drug use in athletics, that young people today are much too sophisticated and wise to be taken in by such ads. They know it is peculiar when they read in the daily headlines in the newspapers about athletes using drugs to see those same individuals telling them to get high on sports, not drugs and other such nonsense. I think, and personally believe that if you get any people—in a position of respect in our society—that they should do whatever they can to combat drug abuse and perhaps the intent here now in the NCAA, one does not know, I refer to their attempts to cover up their own problems, whether this was a conscious attempt or not, but I am saying what the effect of it was. The effect was, it focuses attention on those individuals who this society traditionally views as having drug problems and to give the general public the impression that if they can get Johnny to cut his hair and try out for the football team that they will have the drug problem licked.

Now, I think it is particularly unusual when we have documented evidence that professional teams such as the San Diego Chargers, at one point in time were giving massive doses of amphetamines to their players.

Senator BAYH. I don't know of any organization that would not condemn that.

Mr. SCOTT. I am saying that kind of thing is going on. We have the Commissioner of the National Football League talking about suddenly wanting to introduce drug tests and I happen to support the position of Mr. Garvey of the National Football Players' Association on this, that it is rather peculiar that those very same individuals and team owner and managements who introduced these drugs into professional athletics, are now the ones that are trying to blame it on the players, trying to create the impression that this is somehow a problem of the players. The truth as our investigations reveal is that the players were introduced to these drugs by the owners and management of the professional teams.

Senator BAYH. Thank you, Mr. Scott. I appreciate your testifying so frankly as well as the deep concern that you show for these problems.

Mr. SCOTT. You are welcome.

Senator BAYH. The next witness is Dr. Daniel F. Hanley, M.D., College Physician, Bowdoin College, Brunswick, Maine; a member of the International Olympic Committee's Medical Commission.

STATEMENT OF DANIEL F. HANLEY, M.D., COLLEGE PHYSICIAN, BOWDOIN COLLEGE, BRUNSWICK, MAINE, MEMBER—INTERNATIONAL OLYMPIC COMMITTEE'S MEDICAL COMMISSION

Dr. HANLEY. Thank you.

Senator BAYH. We appreciate your being with us.

Dr. HANLEY. Thank you very much, sir.

Senator BAYH. You may proceed.

Dr. HANLEY. Just so we get some continuity in the record, let me just begin by stating that I have listened to Mr. Scott's testimony and I disagree with most of it. Especially I disagree with that part about that says one third of the Olympic track and field athletes in Mexico back in 1968 were on drugs. This is an absolute falsehood. I lived with those people; I saw them on a day-to-day basis, and not only that, but other years, and this is just not true. It is true there is no test for steroids, no practical test, and none was done.

Senator BAYH. As I recall, Mr. Scott referred to Dr. Tom Waddell.

Dr. HANLEY. Yes, sir, Tom Waddell.

Senator BAYH. Do you know Tom Waddell?

Dr. HANLEY. He is a very fine gentleman, he was with the decathalon part of the track team in Mexico. He is here in Washington as a physician at Georgetown University.

Senator BAYH. Did he make that statement in trying to scare people?

Dr. HANLEY. I think Tom Waddell, being with the decathalon group and with the weightmen of track and field possibly saw more of the group that is using or uses that type of preparation than he would have seen had he been with the entire team.

Senator BAYH. Did you just get through telling us that you agreed with his statement?

Dr. HANLEY. No, no; I said I disagreed with the statement that one-third of the athletes were on drugs.

Senator BAYH. How significant do you think the problem was, Doctor?

Dr. HANLEY. I think the problem is a very real one; we should try to get some factual information on it, sir. I don't have factual information except in those cases where we have done studies.

Senator BAYH. I am concerned, as someone with legislative responsibility. Where do we get studies not limited to the recommended dosages, but of massive dosages as testified to by Mr. Shinnick and others. How can we get studies where athletes, coaches, and trainers will be absolutely honest, and will not be embarrassed. So they can tell us what is really happening. Where do you get that information? Do you have it?

Dr. HANLEY. Sir, there are no studies of this type and this is one of our problems. If we had good basic objective information, not testimonials about someone else, not surveys done by others, but good basic studies, we would be able to put a good handle on the problem. The primary problem exists in this area by virtue of the fact that there is no good practical test for anabolic steroids. But, Steroids are only one part of the problem.

There are tests for the other parts of the problem.

Senator BAYH. Would those apply to Mexico?

Dr. HANLEY. Yes, sir.

Senator BAYH. There are no tests for steroids?

Dr. HANLEY. No, sir; no practical tests for the determination of exogenous steroids in athletics.

Senator BAYH. In going back to Dr. Waddell's testimony that one-third of the athletes use steroids in preparation for the Olympics, were you associated with these athletes during this period?

Dr. HANLEY. Yes, sir; both in preparation for Mexico and for several years I have been connected with this group from time to time, not constantly, but during competition.

Senator BAYH. I would like to put your biographical data in the record. It shows your significant association and participation in 1960, 1964, 1967, 1968, in Mexico. So I think you speak as an expert inasfar as an expert's horizon goes.

Dr. HANLEY. It has to be partially opinion.

[The biographical data referred to follows:]

BIOGRAPHICAL SKETCH OF DANIEL FRANCIS HANLEY, M.D.

Born in Amesbury, Massachusetts, March 27, 1916.
Married (4 children).

Education

Amesbury High School, Amesbury, Mass., 1933. Governor Dummer Academy, 1935. Bowdoin College, B.S. Degree, 1939. Columbia University College of Physicians & Surgeons—M.D. Degree, 1943. Columbia Presbyterian Medical Center, New York. Boston City Hospital, Boston, 1943-44. U.S. Army Medical Corps, Major, 1944-46.

Positions

College Physician, Bowdoin College—current.
Editor, The Journal of the Maine Medical Association—current.
Executive Director, Maine Medical Association—current.

Board of Directors, Associated Hospital Service of Maine (Blue Cross/Blue Shield) current.

Advisory Committee—State of Maine, Dept. of Health & Welfare—current.

Physician, United States Olympic Team: Rome, 1960; Tokyo, 1964; Winnipeg, 1967; Grenoble, 1968; Mexico, 1968.

Physician, U.S. Track & Field Team, Russia, 1961.

Permanent Member of the Medical Commission of the International Olympic Committee—United States Representative—current.

International Association of Olympic Medical Officers—Deputy Chairman—current.

Chairman, Medical & Training Services Committee, United States Olympic Committee, 1972 Quadrennium.

Awards

Sports Illustrated Silver Anniversary All America Award Winner, 1963.

Alumni Award for Faculty and Staff, Bowdoin College, 1971.

Published Articles

"Athletic Injuries"—Journal of National Athletic Trainers Association.

"Athletic Games as a Factor in Physical Fitness"—Connecticut Medicine, Connecticut State Medical Journal, December, 1963.

"Report of Medical Section of U.S. Team to the Games in Mexico City—October, 1965". For United States Olympic Committee, October, 1965.

"What is Health?"—U.S. Public Health T.V. Series—Education T.V., January, 1967.

"The Catastrophic Triviality"—Nutrition Today, June, 1968.

"Hurrah for Home Cooking"—Nutrition Today, Winter, 1970, Vol. 5, No. 4.

"Health Problems at the Olympic Games"—JAMA, Aug. 28, 1972. Vol. 221, No. 9.

"Pill Popping and Performance"—Modern Medicine, June 26, 1972, pp. 81-84.

"The Making of a Champion"—Science Year, World Book Encyclopedia, 1972.

Senator BAYH. You said that you thought the statement relative to the extent of use of steroids at Mexico City, and the Olympics was exaggerated. Yet you seemed to suggest Dr. Waddell is a very credible individual and would not resort to scare tactics. Is it fair to say that this assessment that one-third of all the athletes were using steroids for their preparation for the Olympics would be true as far as he knows it, relative to the athletes with whom he came into contact?

Dr. HANLEY. I am sure Tom Waddell, as far as I know, would not lie about this. I think his statement is true as far as he knows it. My point is that he would know mainly the decathalon people and the weight people and he didn't know the entire track team and certainly didn't know the entire U.S. Olympic teams as the rest of us did.

Senator BAYH. We had Mr. Shinnick testify and he is a track man and he suggested that after years of receiving the temptation, the last 3 or 4 years he did use steroids as a track man, not as a weight man.

Dr. HANLEY. I am not here to say that they aren't used, I am here to say that I disagree that one-third of the athletes use them, that is an exaggeration.

Senator BAYH. I think you admitted we don't have any evidence to prove either side really.

Dr. HANLEY. We don't. This is the basis of my testimony, we really don't have evidence and we really ought to try to get some.

Senator BAYH. Mr. Shinnick, did you want to make a comment. I don't want to get us involved in an extended debate. I think the record is rather complete with your testimony.

Mr. SHINNICK. Yes; I talked to Tom Waddell about the statements because I was concerned with the discrepancy too. I talked to him when he was out in San Francisco last year. When Dr. Waddell was out in south Lake Tahoe he told me that he held sick hours from 9 o'clock to 10 o'clock and he got to know the athletes quite well and he was doing this for a period of 3 or 4 weeks. This is what Tom told me, that through these, you know, consultations, being a doctor on duty at Lake Tahoe, plus being an active participant, he had access to information and had confidence that other guy's didn't have.

Senator BAYH. Well, why don't you proceed, Doctor.

Dr. HANLEY. Thank you.

Down through the years, there have been thousands of substances which have been used by athletes to improve performance in sports and the basis of it all is, had there been one substance which really worked, which really did improve performance, I think it would be broadly used by most athletes. This is not proven to be the case. We have been involved in testing of athletes for dope. In 1968, the winter and summer games and again in 1972. At the winter and summer games that is. You understand that we do not have a test for steroids. The incidence of positives is very, very low. There is no chemical answer that will improve performance, but unfortunately in recent years more and more special diets and special substances are being touted for personal profits, profit motives, I think, by some who are in a position to influence athletes and almost every one of these substances has been backed by a series of rather shoddy experiments which tend to show some benefit from steroids. The benefits of steroids, for example, are touted in face of the fact that the experiment was done with special diets and special weight training programs and half a dozen athletes or so used this. This all adds up to an experiment which will benefit some individuals who want to derive some financial gain from this sort of thing.

These experiments don't stand the test of time. There is nothing that we know that will consistently improve an athletes performance on a daily basis. There is no way to supercharge a normal cell, to the best of my knowledge. This statement is not acceptable in the sporting world, I know. There is no known substance which consistently improves performance in the normal healthy and well-trained athlete.

As for amphetamines, there is a growing bit of evidence to show that humans develop an increased amount of insulin in their bloodstream, after taking amphetamines, with the resulting of lowering of blood sugar, and this may actually cause a decrease in performance. There is, of course, also the horrible possibility that you alluded to earlier with amphetamines developing a drug dependence, and, as stated by a psychiatrist, joining in the commonest cause of acute psychosis in the young adult—Dr. Golden has spoken to you earlier on this and I have read his testimony.

It is my belief that steroids really hold no magic and they do hold a lot of potential harm. When used in the young athlete they tend to hasten the closure of the bone growth lines, stunt his growth, it will alter his sexual development and in the continued use in the high dosage they do cause liver problems, they do cause ulcers, they do cause psychoses, but the question I think we really ought to find the answer to and I am not sure anybody knows it yet, is what do they do to the normal healthy young adult. Young athletes in particular. Here again in the literature you can find almost anything you want, but there are very few well-controlled studies involving significant numbers of athletes over a reasonable period of time. In these few studies the athletes do show an increased weight, but when this increased weight gain is measured against the body components, it is largely retained fluids, not increased muscle. The increased muscle comes from utilizing that muscle upwards of 70 percent of its capacity on a 5-day-a-week basis, not from taking pills. You asked about large doses? We have no studies except in those individuals who can be hardly classified as normal, who take large doses of steroids and who have taken large doses of steroids over a period of years for medical conditions, allergies, (asthma,) leukemias, etc. and they sure don't put on a lot of muscle.

Senator BAYH. Doctor, what about the one specific example that has been brought to the committee's attention. All of the top weight lifters in the international competition in Ohio being found to have been on steroids?

Dr. HANLEY. Yes, sir. That is correct.

Senator BAYH. Did they take amphetamines because of excess weight?

Dr. HANLEY. Sir, what was not told to you was that in Ohio, I believe in 1970, Columbus, Ohio, the championships and the testing was done the first 3 days, over a weekend. The lab reported the results on Monday. The events continued. Several classes of weight lifting followed these first 3 days. There were more records broken in the later events and no positives were found.

Senator BAYH. Well, that doesn't get around the fact that you had the top three in those classes that were tested disqualified, were on steroids.

Dr. HANLEY. Well, if you get into that fiasco, if we can call it that, there is some pretty good evidence, that those tests were not very well done and were certainly not very accurate because, the next year these people were all reinstated by the international weight lifting group and the tests were negated.

Senator BAYH. Was that because they weren't accurate or some effort was made to try to put everybody back on a sound basis?

Dr. HANLEY. I think this depends on with whom you speak. If you talk to Professor Beckett of London who is the leading gas liquid chromatologist, and the leading tester of drugs in sports, he says the testing was very shoddy and wouldn't stand up, and that is the reason they were reinstated. If you talked to some of the people who were in the sport themselves, they say it was largely a political maneuver, and I really don't know the answer. All I know is that they were reinstated. I know you didn't hear the whole story, and I wanted you to hear the whole story. The first three classes, there were positive drugs, the rest of the nine classes, no positives and more records were broken in the second half than the first. The studies done in Winnipeg in 1967 in the cycling road races there were more among losers than the winners and essentially the same number of losers and winners were checked. In the world skating championships in Milwaukee which was in 1971, Milwaukee, Wis., there were more, many more positives in the caffein study among the losers and there was only one among the winners.

Senator BAYH. Now, you heard the testimony.

Dr. HANLEY. Yes, sir, that is why I am disagreeing.

Senator BAYH. Do you disagree with the statement that, I don't know if it was Mr. Scott or Mr. Shinnick, that said inasmuch as you only have one winner and everybody else loses, if you play that numbers game, the statistics are going to come out indicating more users among losers than winners.

Dr. HANLEY. Sir, if we're calling winners the first three in the trials and the first three in the finals, and test the same number among those who finish—from the fourth place on down, your numbers game doesn't hold up. This would be because you're testing the same number of losers as you are winners. In 1970, or 1971 study of the speed skating championships, everybody was tested, winners and losers.

Senator BAYH. Well, in that, if you test everybody, you only have one winner and everybody else loses. If you have three medalists and 13 losers, what about that?

Dr. HANLEY. But there were none of them among the winners.

Senator BAYH. None among the winners?

Dr. HANLEY. Okay, actually, one who finished a poor third was positive if you want to go on to those aspects of the game and go on to what happens with steroids, just from the public records, Randy Matson's shot put record stood from 1967 until late winter or early spring of 1973 which is a fairly long time, in spite of the weightmen taking more steroids than any man would consider reasonable. From the early 1880's when the first cases of doping were reported, and the drugs used were nitroglycerin, strychnine, and brandy or whatever records have been made by well-motivated individuals who sharpened their ability through hard work and intelligent practice. Your letter suggested that we stick to four or five subjects and I will try to do this very quickly.

The extent of use, was one of the questions you asked us to speak on. During the 1972 Olympic Games in West Germany, approximately 3,000 dope control tests were done and only 12 positives were recorded, but these figures did not tell the whole story.

Tests were done on some portion of every sport competition, and on most finals. Had this effort been concentrated on a few events and everyone in those events tested, the results might have been different. In the attempt to do a broad-based program, the German organizing committee set up a program on testing for the Olympic games which included the testing of the sailors and keil and testing of the riders and the equestrian events. In areas like this the chances of finding any positive drugs are very small. Had they stuck with cycling and weight lifting and judo and boxing and done everybody in those tests, we might have seen some different results.

You asked what drugs were most commonly used, amphetamines, ephedrine, strychnine, corodeine, some tranquilizers, barbituates, and Valium and steroids alone or in combination with vitamins account for most of the substances in the current field in sports.

Senator BAYH. Tell us a little bit about this ephedrine.

Dr. HANLEY. Ephedrine.

Senator BAYH. It was used by the young man who won.

Dr. HANLEY. Rick Damont.

Senator BAYH. How in the sam hill did he get himself in a position like that. That drug, as I recall, was being used to correct his asthmatic condition, not to stimulate or in an effort to relieve the mental pressures, was it not?

Dr. HANLEY. That is what he says, yes, sir.

Senator BAYH. That is what he says, what is your impression as a doctor?

Dr. HANLEY. I have never examined Mr. Damont, I don't know his medical status.

Senator MATHIAS. That is like finding Moses in the bullrushes.

Senator BAYH. That ain't necessarily so.

Senator MATHIAS. That is what he says that he says.

Dr. HANLEY. Let me answer that question. The definition of doping which was given to every coach and manager of the U.S. Olympic Team repeatedly and in it it says that "doping is the administration of or use by competing athletes of any substance foreign to the body and any physiological substance taken in abnormal quantities—and so forth" when necessity demands medical treatment with any substance which because of its nature, dosage and application may be able to improve the athlete's performance in an artificial and unfair manner (maybe), this is to be regarded as doping, and on the addenda to my statement given to you this morning, there is a copy of the substances which were banned and ephedrine is one of one of those substances.

Senator BAYH. I have been told, I don't know how credible this is if our Olympic Committee, had filed the right papers relative to Mr. Damont's treatment he would not have been disqualified.

Dr. HANLEY. That is absolutely false.

Senator BAYH. That is false.

Dr. HANLEY. Yes, sir.

Senator BAYH. Any use of this drug at all would have disqualified him?

Dr. HANLEY. Yes, sir.

Senator BAYH. For any purpose.

Dr. HANLEY. Yes, sir.

Senator BAYH. Perhaps this is not the proper forum to ask, but are there procedures that should have been followed to advise this young man of this prior to the competition?

Dr. HANLEY. It is, sir, it is my belief that they had been done.

Senator BAYH. Well, why don't you proceed with your testimony.

Dr. HANLEY. Okay. If doping doesn't do any good, why all the testing and why all of the furor about it? Doping to improve performance has according to Dr. Dirix of Belgium, has accounted for at least 30 deaths in sports and a lot more near deaths and medical problems.

Senator BAYH. Over what period of time?

Dr. HANLEY. About the last 20 years, I believe is the time period he has been dealing in. He didn't give exact dates, but I think the survey covered the past 20 years.

Senator BAYH. Can you specify what kind of drugs, what kind of competition?

Dr. HANLEY. Yes, he does, he does pretty much, it is on the green book on doping which I have given you.

Senator BAYH. Fine, we will see that is placed in the record.

[The document was marked "Exhibit No. 2" and is as follows:]

[Exhibit No.2]

Comité
International
Olympique

International
Olympic
Committee

Doping

Commission Médicale du CIO
IOC Medical Commission

Président Chairman	Le prince Alexandre de Merode
Vice-président Deputy Chairman	Dr. Arpad Csanadi
Membres Members	Prof. Arnold Beckett Prof. Giuseppe La Cava Dr. Pieter van Dijk Dr. Albert Dirix Dr. Nina Grayewskaya Dr. Daniel F. Hanley Dr. Eduardo Hay Prof. Ludwig Prokop Dr. Jacques Thiébault
Représentants des Comités Organisateurs Representatives of the Organizing Committees	Prof. Yoshio Kuroda Sapporo Prof. Herbert Reindell Munich

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Sapporo 1972.

Published by the Medical
Commission of the International
Olympic Committee in
cooperation with the Organizing
Committee for the Games of the
XXth Olympiad Munich 1972
and the XIth Olympic Winter
Games Sapporo 1972.

Lausanne 1972

A la veille de l'ouverture des Jeux Olympiques de 1972, il nous a paru nécessaire de faire le point et d'informer largement l'opinion sur tout ce qui concerne le dopage.

La présente brochure a pour but d'expliquer les dangers du dopage, de faire connaître les méthodes employées dans les laboratoires et de diffuser le règlement élaboré par la Commission Médicale du CIO.

De telles investigations ne peuvent se dérouler que dans un climat de compréhension, de franche collaboration et d'entraide. C'est à cette seule condition que nous éviterons des incidents peu compatibles avec l'idéal Olympique et la dignité de nos athlètes.

Afin de définir clairement les responsabilités des organismes chargés de cette action, je tiens à rappeler les principes suivants:
1.
La Commission Médicale du CIO assume la responsabilité morale des différents contrôles et en supervise l'organisation.
2.
Les Fédérations Internationales détiennent la responsabilité technique du point de vue sportif (nombre d'examens, qui et quand).
3.
L'exclusion des Jeux Olympiques d'un athlète qui se refusera au contrôle de dopage ou sera coupable de dopage sera prononcé par la Fédération Internationale concernée sur proposition de la Commission Médicale du CIO en application du règlement ci après.
4.
Le retrait d'une médaille sera decidé par la Commission Exécutive du CIO sur proposition de la Commission Médicale du CIO selon la procédure requise dans le règlement ci après.

Nous croyons que le travail désintéressé de tous ceux qui ont collaboré à la rédaction de ce livret, servira la cause de la Jeunesse en contribuant à sauvegarder la santé morale et physique des athlètes Olympiques.

Je formule le vœux que les principes édictés à l'occasion des

On the eve of the 1972 Olympic Games we felt it necessary to clarify the situation and to make our views known on all aspects of the doping problem.

The object of this brochure is to explain the hazards of doping, to make known the methods used in the laboratories and to publish the regulations prepared by the IOC Medical Commission.

Investigations of this type can take place only in an environment marked by understanding, frank cooperation and mutual assistance. Only under these conditions will we be able to prevent incidents incompatible with the Olympic Ideal and the dignity of our athletes.

In order to clearly define the responsibilities of the authorities entrusted with this activity, I should like to reiterate the following principles:
1.
The IOC Medical Commission will assume the moral responsibility for the different kinds of controls and will supervise their organization.
2.
The International Federations will retain the technical responsibility for sports matters (number of checks, persons to be examined, times).
3.
Any athlete who refuses to undergo doping control or who is found guilty of doping shall be eliminated from the Olympic Games by the International Federation concerned following the proposal of the IOC Medical Commission in accordance with the enclosed rules.
4.
A medal shall be withdrawn by decision of the IOC Executive Board following the proposal of the IOC Medical Commission and in accordance with the procedure required by the enclosed rules.

We feel that the selfless effort of all those who have contributed to the preparation of this booklet will serve the cause of youth by helping to safeguard the moral principles and the physical health of our Olympic athletes.

Jeux Olympiques puissent constituer une base sérieux dans d'autres grandes compétitions Internationales et servir ainsi plus particulièrement la cause du sport.

Prince Alexandre de Merode

I hope that these principles, established for the Olympic Games, can be used as a firm foundation for other important international competitions, and especially help serve the cause of sports.

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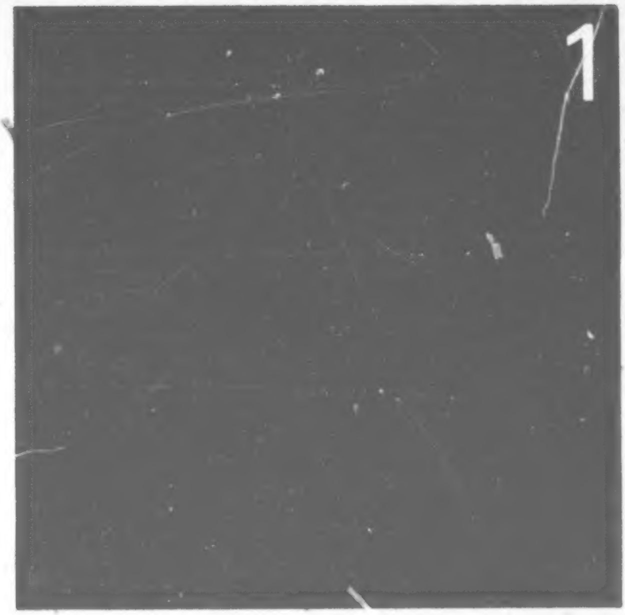
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L'impitoyable concurrence qui règne dans le sport d'élite moderne, tout spécialement sur le plan international, la gloire de la victoire ainsi que les satisfactions sociales et financières – sans commune mesure avec la réalité – qu'offrent les succès sportifs, contraignent l'athlète à user de tous les moyens qui sont à sa disposition pour améliorer ses performances.

N'oublions pas de mentionner – et elle n'est pas la moins importante – la tendance nationale à forcer les performances, afin d'acquérir à tout prix la victoire pour le pays. Les méthodes naturelles et physiologiques d'amélioration des performances, grâce à l'entrainement et à la mise en condition, ont pour la plupart été épuisées et parfois n'apportent plus le succès désiré. En outre, bien des athlètes ne peuvent, ni ne sont capables de se plier à des privations ou renonciations quelconques. Il semble donc facile de concevoir qu'on cherche d'autres méthodes permettant d'atteindre la victoire sportive.

Il serait donc dans une certaine mesure, compréhensible qu'un athlète ait recours à des méthodes plus « simples », surtout s'il croit pouvoir obtenir de meilleurs résultats grâce à quelques pilules. Ce sont ces pratiques, visant à obtenir un accroissement artificiel des performances, et aboutissant à une sorte de préparation médicamenteuse de la compétition, qui de nos jour, sont connues sous le nom de dopage.

Dès l'antiquité

Depuis toujours, l'homme s'est efforcé d'améliorer artificiellement ses performances, faussant ainsi ses résultats dans le combat et dans le sport. Il est donc possible de retracer tout au long de l'histoire l'emploi des substances dopantes, qui s'apparentent au dopage actuel, ainsi que les efforts faits afin de les éliminer. Dès le 3ème siècle av. J.C., les athlètes des anciens Jeux Olympiques avaient déjà essayé d'améliorer leurs performances grâce à toutes sortes de substances. Phylostrate et Galène nous relatent ces faits. Ce n'est que depuis la 2ème moitié du XIXème siècle que nous avons la preuve évidente de l'existence du dopage. Ainsi, en 1865, Pini nous parle d'un cas de dopage lors de la traversée d'un canal d'Amsterdam.

En 1879, lorsque les fameuses courses des six jours eurent lieu pour la première fois, les participants de différentes nations avaient à leur disposition une multitude de petits remèdesmiracle, qui leur permettaient de mieux supporter cette épreuve d'endurance. Les coureurs français préféraient des mélanges à base de caféine, les Belges, eux, préféraient du sucre trempé dans l'éther, d'autres encore préféraient prendre des boissons alcoolisées, alors que les sprinters s'étaient spécialisés dans l'emploi de remèdes à base de nitroglycérine. Dès lors, certains entraineurs jouèrent les apprentis-sorciers, frabriquant toutes sortes de potions miracle à base d'héroïne et de cocaïne. Le premier cas mortel de dopage, causé par une trop forte dose de triméthyle, remonte à 1886 : lors de la course cycliste Bordeaux–Paris de 600 km, le cycliste anglais Linton mourut, après avoir été dopé par son manager, le propriétaire d'une fabrique de bicyclettes. Quelques années plus tard, les premiers essais d'amélioration des performances à l'aide d'oxygène furent entrepris auprès des équipes de football belges et anglaises. Les premiers rapports à ce sujet remontent à 1908. C'est à cette époque que l'on retrouve également les premiers cas de dopage en boxe : il s'agit là de pilules à base de strychnine, de mélanges d'eau-de-vie et de cocaïne. On parle là, pour la première fois, du problème du « doping to loose », méthode consistant à administrer au concurrent des substances diminuant leurs capacités. Ainsi en 1910, James Jeffrie affirma, après un K.O. par Jack Johnson, qu'on avait versé une drogue dans son thé. Entre-temps, ce genre de manipulation, connu sous le nom de para-doping ou antidoping, est utilisé comme une des excuses les plus fréquentes, dans les cas de flagrant délit.

C'est en 1889 qu'apparaît pour la première fois, le mot « doping » dans un dictionnaire anglais. La définition donnée décrit un mélange d'opium et de narcotiques, utilisé pour les chevaux. Contrairement à ce que l'on pense, la racine de ce mot ne dérive pas de l'anglais, mais d'un dialecte parlé dans le sud-est de l'Afrique, en Cafrerie, et qui s'intégra ensuite dans la langue des Boers. On entendait par « dop » une eau-de-vie du pays employée comme stimulant, lors des cérémonies religieuses des Cafres. Ce n'est que par la suite que ce terme fut également employé pour désigner toutes sortes de boissons stimulantes. La vulgarisation et, par conséquent, l'utilisation du dopage pour les chevaux et les chiens, a certainement marqué une étape décisive dans l'histoire du dopage, tel qu'il est pratiqué actuellement dans le sport.

Notons toutefois que les premières vérifications scientifiques de dopage ont été faites en 1910 en Autriche. Inquiété par plusieurs résultats inattendus lors des courses, le Jockey-Club autrichien fait venir le chimiste russe Bukovski qui avait effectivement découvert une méthode permettant de retrouver des traces d'alcaloïdes dans la salive chevaline. Bukovski, ne voulant pas révéler sa méthode, le Dr. Sigmund Fränkel de l'Université de Vienne élabora son propre système. Ainsi, dans les années 1910 et 1911, 218 prélèvements de salive furent examinés et des sanctions adéquates furent prises contre les palefreniers. La découverte de Fränkel stimula d'autres chimistes et médecins, parmi lesquels Kaufmann à Paris. Ces découvertes permirent dans le domaine de l'hippisme de diminuer le nombre des scandales de dopage. Ce n'est qu'en Amérique, pays où l'on commença à doper les chevaux, que, pendant de nombreuses années, l'on n'entreprit rien contre le fléau du dopage. Selon plusieurs rapport de la période d'avantguerre, 30 à 50% des chevaux participant aux courses étaient dopés. Entretemps, grâce aux contrôles réguliers, les conditions ont fondamentalement changé. Selon « L'Association of Official Racing Chemists », il n'y a plus que 1% de chevaux dopés.

La médecine scientifique également s'intéresse entre-temps aux médicaments et aux substances améliorant les performances et des séries de tests ont été entrepris à cet effet. Ainsi, en 1919, Emden fit des recherches approfondies sur les effets pharmacologiques des mélanges à base de phosphore, beaucoup d'autres étudièrent les effets de la benzédrine et en 1934, enfin, ce furent les premières observations cliniques des effets de la benzédrine. L'Allemand Hausschild a développé la pervitine, qui tout comme la méthédrine anglaise fut employée pendant les années 39 à 45, lors des vols de nuit, des grandes marches et des opérations d'endurance de toute sorte.

En 1933, le mot dopage est entré dans le language courant, et l'on peut le retrouver dans tous les dictionnaires spécialisés (P. ex. Beckmann, dictionnaire sportif). Schönholzer, Demole, Knoll, Prokop et d'autres en donnent les premières définitions, tout en soulignant le point de vue médical, ainsi que l'aspect moral et éthique du dopage. Parmi les personnes qui s'intéressent au dopage, athlètes, accompagnateurs, médecins, il en est qui réussiront toujours à embrouiller les pistes et à motiver ou masquer l'usage des stimulants, grâce à une prétendue ignorance ou à une fausse interprétation des règlements de dopage.

Dopage également lors des Jeux Olympiques

Les cas de dopage augmentent sensiblement à partir de 1950. Lors des Jeux Olympiques d'hiver de 1952, à Oslo, on retrouva, dans les cabines des patineurs de vitesse, une multitude d'ampoules brisées et de seringues. Le cyclisme devient un « hautlieu » du dopage. En 1955, lors de l'étape du Mont Ventoux du Tour de France, Mallejak perdit conscience et fut accusé de dopage. En avril de la même année 25 nouvelles analyses d'urine furent faites, parmi lesquelles 5 s'avérèrent positives.
En 1956, après avoir fait usage d'amphétamines, un des coureurs est retrouvé en état d'aliénation mentale et doit être interné dans

la clinique psychiatrique de Montello (Venerando). Lothar Alpler, lors des compétitions amateurs de courses sur route, Nielsen, lors des championnats du monde des professionnels « derrière moto » à Zurich, Fritz Gallati et bien d'autres furent accusés d'avoir pris de l'amphétamine et les sanctions nécessaires furent prises. Pendant bien des années, lors du Tour d'Autriche, des participants autrichiens, polonais et hollandais furent exclus pour avoir fait usage d'amphétamine. Certains coureurs avaient jusqu'à 18 pilules d'amphétamine sur eux. D'autres, tel le Hollandais Scheepers, furent accueillis en héros et en martyrs par leurs compatriotes, alors que les médecins de la commission d'enquête furent blâmés.

« L'American Medical Association » (AMA) cite des cas d'effondrement dus au dopage par substances sympathicomiméthiques, tout particulièrement par amphétamine, sans toutefois que des sanctions soient prises contre les dopés et ceux qui « tirent les ficelles ». Une grande partie des premières mesures prises contre ces délits furent sans succès, tels par exemple en 1952, lors des Jeux Olympiques d'Helsinki, le contrôle d'échantillons d'aliments.
Il s'agissait là d'aliments distribués aux coureurs de marathon.

Des cas mortels donnent l'alarme

Il fallut plusieurs cas mortels, pour que l'attention du public soit attirée sur ce problème. Ainsi un coureur cycliste de 25 ans mourut après avoir ingurgité le contenu d'une bouteille thermos de café, 8 pilules de phénylisopropylamine et 15 pilules d'amphétamine. Le cas de Knut Enemark Jensen est encore plus connu : le jeune cycliste danois succomba, lors des Jeux Olympiques de Rome, en 1960, après avoir pris une trop forte dose d'amphétamine et de dérivé d'acide nicotinique que lui avait administrée son entraîneur. En 1957, l'AMA constata que les « Peppills » dont se servaient les étudiants pendant la période des examens, étaient également utilisés dans le domaine du sport. En 1958, l'« American College of Sports Medicine » cite les résultats d'une enquête : sur 441 entraîneurs, coaches et accompagnateurs, 35% avaient déjà fait usage de la benzédrine ou savaient tout au moins s'en servir, alors que 7% n'étaient pas informés du mode d'emploi de cette substance.

La commercialisation croissante du sport explique les liens toujours plus étroits entre le dopage et le professionalisme. Le dopage par amphétamines est de plus en plus courant dans le domaine du football. Delezenne nous cite le cas d'un joueur qui, après avoir été accusé de brutalité envers l'arbitre, se justifia en disant qu'il avait agi sous l'influence de stimulants qui lui avaient été administrés avant le début du jeu. Une grande partie de ces cas de doping ne sont même pas sanctionnés, parce que les coupables réussissent très souvent à s'en sortir, grâce à leurs relations, à une suspension de la procédure par défaut de preuve, ou grâce à des doutes concernant les règlements de contrôle, ou encore en soutenant qu'il s'agissait d'un acte de sabotage.
Il est malheureux de voir que dans ce sport, tout comme dans le cyclisme, les soi-disant médecins sportifs jouent un rôle peu digne d'éloge. D'autre part, les organismes officiels compétents ne sont pas assez puissants et n'osent pas prendre énergiquement position contre certains athlètes d'élite, de peur de se rendre impopulaires. En outre, la pression exercée sur certains fonctionnaires est très forte, et les intérêts de ceux « qui tirent les ficelles », tout particulièrement ceux de l'industrie, sont pris en considération au détriment des règlements sportifs. Ceci ne fait qu'encourager le dopage. 17% des joueurs prennent des psychotoniques pendant le match et 94% des associations ont recours au dopage pendant la période de l'entraînement : cette constatation alarmante résulte d'une enquête faite en Italie en 1961 par l'Association de football.

On retrouve également des scandales de dopage dans le domaine de la boxe. En 1963, Billy Bello, poids welter, meurt à la suite d'une intoxication à l'héroïne. A Mexico, Edmundo Esparso, poids coq, se dope, avant de monter sur le ring et est exclu pour 3 mois. Dick Howard, 3ème au 400 m haies des Jeux Olympiques 1960, meurt également à la suite d'une trop forte dose d'héroïne.

Le tennis n'est pas épargné : en 1961, lors de la Coupe Davis contre l'Anglais Billy Knight, le joueur, Andres Gimeno, est accusé d'avoir reçu des injections de testostérone. Il s'ensuit tout naturellement une foule de dénonciations et d'accusations à tort ou à raison; la presse à scandale n'y est pas étrangère. Ainsi, certains vainqueurs olympiques se voient accusés d'avoir atteint leur performance grâce à des injections.

Deux cas jouent finalement un rôle décisif dans la bataille du dopage qui sera combattu de plus en plus énergiquement : le cas du coureur cycliste anglais Simpson qui perdit conscience, lors du Tour de France. Il avait pris de l'amphétamine, la fatigue et le soleil lui donnèrent le coup de grâce; il mourut tout comme le boxeur Jupp Elze qui avait également été dopé.

Début de la lutte systématique contre le dopage

Ce fut un groupe de médecins, conscients de leur responsabilité, qui, s'élevant contre la presse à scandale, lança un appel à la lutte contre le dopage et aida à former la première commission de contrôle du dopage. En 1959 l'ANEP (Association nationale d'éducation physique) fonda en France la première commission de contrôle du dopage. La même année, les congrès internationaux de médecine sportive à Paris et à Evian se vouent tout particulièrement au problème du dopage et décident de prendre les mesures appropriées. Lors de divers congrès antérieurs (Zurich et Weimar 1955, Hambourg 1957), le problème du dopage avait été considéré comme un phénomène intéressant mais qui alors ne présentait guère d'intérêt. En 1962, la Fédération italienne des médecins du sport (FMSI), organise une enquête sur le dopage et à Moscou, le CIO décide de prendre des mesures contre le dopage. Faute de sanctions adéquates, ces mesures prises ne furent pas encore couronnées de succès. La Fédération italienne de football met sur pied une commission d'enquête sur le dopage et, par la suite, différents clubs de football forment un service d'alerte, afin de s'informer mutuellement des démarches de cette commission. Malgré cela, cinque joueurs sont déclarés coupables de dopage à Bologne.

Les premières mesures officielles contre le dopage furent prises par le gouvernement autrichien. Le Ministère de l'Education Nationale met sur pied une commission d'enquête et menace, par décret du 30.9.1962, de sanctionner durement les athlètes dopés et leur association, en leur coupant par exemple toute subvention et en leur interdisant l'usage des terrains de sport publics.

A Strasbourg, en janvier 1963, le Conseil de l'Europe entreprend la première démarche officielle décisive pour la lutte contre le dopage en organisant une commission d'experts. Lors des premières démarches effectivement entreprises, il s'avère bientôt que l'une des plus grandes difficultés dans la réussite de la lutte contre le dopage réside dans le problème de la définition exacte du dopage. On procède donc à l'élaboration de cette définition. La définition choisie à cette époque est la suivante : « Par dopage, on entend l'usage par des personnes saines – dans le but d'améliorer les performances d'une matière artificielle et déloyale lors des compétitions – de substances physiologiques étrangères au corps. En outre, certaines influences psychologiques, tendant à l'amélioration des performances sportives, doivent également être considérées comme dopage. »

Cette allusion à des effets psychologiques extrêmes, c.à.d. l'hypnose, par lesquels les athlètes sont réduits à l'état de robots téléguidés, se référait alors tout particulièrement aux manipulations auxquelles avaient été exposés certains nageurs australiens, footballeurs anglais et autres athlètes. On décida cependant de ne pas prendre cela en considération, faute de pouvoir fournir les preuves nécessaires. Dans la même année, cette définition est confirmée par le premier colloque de dopage à Uriage et par le congrès de médecins du sport à Barcelone.

Première liste officielle des substances dopantes

Dans la pratique, il est difficile de discerner un dopage d'un traitement à base de stimulants prescrits par un médecin. C'est pourquoi en novembre 1963, lors de la réunion des experts européens à Madrid, un élément additionel a été apporté à la définition :

« Dans le cas d'un traitement nécessitant des médicaments dont la nature ou la quantité peuvent influer sur la capacité de performance normale, on parlera de dopage pouvant entraîner l'exclusion de la participation aux compétitions ».

A cette définition l'on joignit une liste des substances qui devaient être considérées comme substances dopantes; elle contient des narcotiques, des dérivés d'amphétamine, certains alcaloïdes, tels la strychnine et l'éphédrine et en général tous les analeptiques, et tous les médicaments activant la fonction respiratoire, les psychotoniques ainsi que certaines hormones.

Lors de divers congrès de l'UNESCO, en 1964, à Genève et à Bruxelles, lors du congrès mondial de dopage qui eut lieu pendant les Jeux Olympiques de 1964 à Tokyo, lors du 2ème congrès national de la médecine sportive au Chili, ainsi que lors de différentes rencontres nationales en Allemagne, Autriche, Italie, Suisse, Angleterre et finalement lors du congrès du Conseil de l'Europe de Strasbourg en septembre 1965, les services compétents du sport et de l'Etat ont pris des mesures énergiques afin d'éviter les dangers – du point de vue de la santé aussi bien que du point de vue moral – auxquels le dopage expose les athlètes.
Entre-temps, en novembre 1964, un projet de loi est soumis au Sénat français, interdisant l'usage abusif de substances pharmacologiques proches du dopage et prévoyant outre la disqualification, des amendes ainsi que des peines de prison allant jusqu'à un an. Ce projet de loi est accepté à l'unanimité, par conséquent la loi contre le dopage entre en vigueur en 1965. Dans la pratique, l'application de la loi se heurte cependant encore à des difficultés, telles que certaines imprécisions concernant la détermination de son application.

Le 2 avril 1965, la Belgique enboîte le pas à la France et promulgue une loi antidopage. A cause de leur constitution, certains pays ne peuvent promulguer une telle loi. D'autres ne veulent pas la promulguer sous prétexte que la possession illégale ainsi que la vente ou l'emploi [illegible] drogues menant à la toxicomanie, sont déjà interdites par la loi et par conséquent punies de lourdes peines. Soutenues par des accords internationaux, tels que la convention internationale sur l'opium de 1831 et l'accord de La Haye sur l'opium de 1921, ainsi que des accords passés avec l'Organisation Mondiale de la Santé, les lois des différents pays prévoient de sévères sanctions contre de telles infractions : amendes ou peines de prison allant jusqu'à 10 ans de réclusion.

Et pourtant ce sont souvent justement des médecins qui sont étonnamment généreux sur la prescription de ces substances, soit parce qu'ils espèrent en tirer quelque profit, soit parce que leur chauvinisme mal placé et leur orgueil national les poussent à administrer des dopants. Ces médecins, qui, sciemment se laissent aller à de telles pratiques, portent atteinte à l'éthique – du point de vue médical et humain. Aujourd'hui encore, certains hauts fonctionnaires du sport soutiennent malheureusement cette mentalité, parce qu'ils voient dans les rencontres sportives internationales, l'enjeu du prestige international, de sorte que l'engagement total de l'athlète et le sacrifice de sa santé pour la sauvegarde de l'honneur national, représentent pour eux un devoir tout naturel envers leur patrie. Il va sans dire que les démarches entreprises depuis près de quinze ans, par l'Etat et par les Fédérations Internationales, qui, dans la plupart des cas, ont mis sur pied une commission d'enquête sur le dopage, ont déjà remporté plusieurs victoires. Ainsi, d'après Dirix, dans le domaine du cyclisme, le nombre d'examens s'avérant positifs, a régressé de 25,5% en 1965 à 20% en 1966 et à 8% en 1967. En Italie, d'après le rapport de Venerando, le nombre de cas de dopage chez les coureurs cyclistes soumis à un contrôle, a régressé de 32,94% également, cette sévère campagne a été également couronnée de succès dans le domaine du football.

Alors que d'après Ottani – en 1961 – on comptait encore 27% de cas de dopage parmi les cas contrôlés, il n'y en avait plus un seul à l'amphétamine dans les années 1963–64. Les contrôles entrepris lors des championnats du monde de football en Angleterre en 1966 donnèrent eux aussi des résultats négatifs. Notons toutefois que la régression des cas positifs chez les amateurs est proportionnellement moins forte que chez les professionnels. On passe également de l'emploi des amphétamines à l'emploi de stimulants moins forts, tels l'éphédrine et certains analeptiques. Ces substances moins nocives sont cependant administrées à de si fortes doses, que leur effet pose à son tour de grands problèmes du point de vue médical.

Intervention du Comité International Olympique

L'une des grandes démarches entreprises dans le domaine du sport a été le remaniement, en 1967, de la Commission Médicale du CIO, sous la présidence du Prince Alexandre de Merode. Lors des Jeux Olympiques d'hiver en 1968 à Grenoble, la Commission a effectué ses premiers contrôles de routine, tout en poursuivant son activité pendant les Jeux de la XIXe Olympiade à Mexico.

Les avis différents quant au contenu de la liste des substances et les critères pris en considération variant selon les disciplines, les règles olympiques sont souvent heurtées. Malgré tout, la Commission du CIO effectue près de 1000 contrôles de dopage, en accord avec les Fédérations Internationales sportives, et propose de disqualifier en cas d'infraction aux règlements. Et pourtant on note déjà une uniformisation des règlements de dopage auprès des Fédérations Internationales, telles par exemple la (FISA) Fédération Internationale des Sociétés d'Aviron et la (IAAF) Fédération Internationale Amateur d'Athlétisme, qui acceptent sans exception les règles fondamentales du CIO.

De nos jours, la lutte contre le dopage est facilitée par certains procédés, tels que l'analyse d'urine – méthode mise au point au cours de ces dernières années – et la détermination par la chromatographie en couches minces et par la chromatographie gazeuse. Les efforts entrepris en vue d'une uniformisation des méthodes de contrôle de dopage – dont s'occupe tout particulièrement le Prof. Beckett, sont une aide précieuse dans la lutte contre le dopage. En 1969 déjà, des congrès scientifiques ont eu lieu, dans le but d'uniformiser à l'échelle internationale les méthodes de contrôle.

Du point de vue biologique, le dopage est une méthode artificielle, parfois mortelle, qui ne permet d'obtenir qu'une victoire à la Pyrrhus.

Malgré tout, l'aspect médical du dopage se voit relégué au second plan, après l'aspect éthique et le côté fair-play du sport, étant donné que le dopage n'est pas obligatoirement nocif, bien qu'il soit toujours déloyal et contraire à toute morale sportive. Or, de nos jours, la définition du dopage est relativement souple. En outre, l'administration d'éléments revitalisants, tels que le sucre de raisin, le calcium, la lécithine, le phosphate, les protéines, les vitamines, n'est pas considérée comme dopage, même si ces éléments sont administrés en injections avant les compétitions.

Les effets des substances employées de nos jours sont multiples, et leur influence sur les performances est souvent incertaine et douteuse. En outre, on ne connaît aucune substance qui ne produise des effets secondaires nocifs, variant selon la dose administrée. Les effets de ces substances sur un seul organe moteur, provoquant un accroissement des performances, ne peuvent que rarement être isolés. Ceci est surtout valable dans le cas d'un accroissement de la force musculaire, de l'endurance et d'une meilleure coordination des mouvements.

La plupart des dopants ne provoquent qu'une décontraction centrale et ainsi une augmentation de l'activité de nature psychique. Un tel méchanisme se produit tout particulièrement chez les athlètes plus âgés, qui, au cours des années, ont acquis une multitude d'inhibitions conscientes ou inconscientes, dues à des expériences désagréables ou à des blessures, qui les empêchent de tirer profit de toutes leurs forces. Une fois ces inhibitions dissipées grâce aux substances dopantes, l'athlète est souvent capable d'obtenir de meilleures performances. En même temps, disparaissent certaines barrières physiologiques dont le but est d'empêcher le surmenage. Il s'agit là d'une diminution extrême et par là mortellement dangereuse, de substances énergétiques, tout particulièrement de la sensation de fatigue, représentant une barrière physiologique contre le surmenage de l'appareil moteur et du système circulatoire, ainsi que des systèmes d'hormones et de ferments mobilisant l'énergie.

Les jeunes athlètes étant plus facilement enclins à déployer toutes leurs forces au cours d'une compétition, leurs expériences négatives étant quasi inexistantes, ils peuvent plus facilement se dépenser. Presque toutes les enquêtes démontrent que dans ces groupes d'âge, les dopants accroissent la performance. Pour les athlètes d'un certain âge qui se dopent, il existe très souvent une très grande différence entre le jugement qu'ils portent personnellement sur leur capacité propre de performance et leur capacité objective évaluée d'après le fonctionnement de l'appareil moteur, de la circulation et du métabolisme. Il est paradoxal que, par la stimulation psychique, la performance générale soit parfois améliorée, alors que l'on peut noter une nette régression de la performance organique. Cette divergence est surtout provoquée par l'influence de l'alcool, de la nicotine et de tous ces éléments qui confèrent une certaine euphorie et, par là-même, empêchent que l'athlète juge son propre comportement.

Diminution des performances et atteintes à la santé

Ce qui caractérise la plupart des substances c'est le fait qu'au bout d'un certain laps de temps marqué par une amélioration des performances, on peut noter un temps de réaction accusant une diminution très nette des performances. Les « contreréactions » de l'organisme souvent imprévisibles et difficiles à contrôler ne sont pas sans danger et demandent une période de rétablissement prolongé. Les effets de la plupart des substances dopantes, étant incertains et dépendant – à un moment précis – de l'état du système végétatif de l'athlète, sont souvent sujets à de grandes fluctuations.

L'expérience prouve qu'il en découle des difficultés de sondage. Une certaine habitude intervenant, la dose de substance dopante doit souvent être continuellement augmentée. Ainsi on atteint souvent une dose toxique, qui mène à des symptômes de toxicomanie ou à la mort par intoxication. Le danger est accru par des éléments, tels par exemple certains médicaments vasodilatateurs, un effort excessif, ou une influence climatique prononcée – par exemple la chaleur ou le soleil –.

Quand arrivent l'habitude ou la toxicomanie inévitables, tôt ou tard, lors de l'usage de stupéfiants ou d'amphétamines, les athlètes comptent de plus en plus sur les réactions provoquées par les substances employées et négligent la préparation physiologique du combat, ainsi que l'entraînement, ce qui se traduit par une forte baisse des performances, tant sur le plan moral que physique et sportif.

Parmi tous les produits de dopage notons surtout les amphétamines, qui en plus de leur réaction stimulante centrale supprimant toute sensation de fatigue, attaquent certaines parties du système nerveux végétatif. Ces stimulants, ainsi que certaines substances dopantes faisant partie d'autres groupes pharmacologiques et provoquant des réactions analogues, comme par exemple l'éphédrine, sont connus sous le nom de substances dites sympathicomimétiques. En d'autres termes, ils activent le tonus du sympathique qui entre en action lorsqu'il s'agit de produire de gros efforts. Le parasympathique dont le rôle est de régénérer les forces, voit son action éliminée, de sorte que l'économie de performance et de régénération devient de plus en plus faible. A tout ceci s'ajoutent des réactions, ainsi que certains troubles et parfois certains effets négatifs également typiques du sympathique, tels qu'accélération de l'hypertension, pâleur, augmentation de la transpiration et du tonus dans la musculature squelettique, hyperémotivité, troubles de la digestion et troubles sexuels. Ce sont en principe les mêmes symptômes que ceux que présente un entraînement trop poussé. C'est pourquoi, l'amélioration des performances par l'emploi d'amphétamines activant le nerf sympathique, est une charge supplémentaire pour tout l'organisme et met la santé en danger. Tout effort supplémentaire, tel que l'emploi abusif de produits vasodilatateurs, souvent utilisés pour améliorer la circulation sanguine musculaire, provoque le surmenage de l'appareil circulatoire et aboutit à un effondrement total.

Les deux cyclistes Jensen et Simpson sont morts à la suite de tels effondrements. D'autres substances dopantes, comme par exemple la strychnine, employée pour accroître les performances de force et de vitesse, excitent le tonus musculaire à un tel point que, si l'on dépasse à peine une certaine dose, elles provoquent des crampes musculaires généralisées, qui, tout comme le tétanos, affectent dangereusement le système circulatoire.

L'une des caractéristiques des athlètes dopés est leur comportement psychique. L'athlète dopé donne souvent l'impression d'être dans un état d'ivresse. Il est irritable, son regard est vitreux et son comportement ressemble à celui d'un somnanbule ou d'un ivrogne. D'autres sont sujets à des troubles généraux du sens de l'équilibre, parfois même à des troubles du langage et de la mémoire, dans le sens d'une amnésie. Parfois ils deviennent agressifs ou maniaques ou même euphoriques, exagèrent leurs mouvements et ne les coordonnent plus.

S'ils ne sont plus sous l'effet de leur dopant habituel, ils deviennent désagréables, troublés, renfermés, irritables et apathiques. A cet état s'ajoutent, selon les substances employées, une pâleur anémique et une transpiration de la paume en cas d'emploi d'amines sympaticomimétiques, ou une contraction de la pupille en cas d'emploi de morphine. L'emploi régulier de ces substances mène à la toxicomanie et entraîne l'athlète, très souvent, à la déchéance. L'athlète, tout comme d'autres drogués, devient alors un outil dont se servent des managers sans scrupules qui lui fournissent ainsi les substances dopantes, sans lesquelles il ne lui est plus possible de vivre.

De nos jours, les stéroides anabolisants, qui soi-disant « développent les muscles », sont utilisés en grandes quantités dans de nombreuses disciplines sportives. Bien que leur effet soit particulièrement nocif, (ils attaquent, par exemple, le foie et le squelette, entraînent des troubles du métabolisme et des fonctions sexuelles et provoquent chez les femmes une virilisation ainsi que des troubles de la menstruation) ces substances n'ont pas encore été inscrites sur la liste des dopants ; en premier lieu, parce que le contrôle en est particulièrement difficile et que les méthodes laissent encore à désirer, en second lieu, parce que ces substances ne peuvent être identifiées si l'administration en a été interrompue 2 à 3 semaines avant le contrôle, même si une certaine hypertrophie des muscles en résulte due à une administration préalable régulière pendant plusieurs mois.

Le problème du dopage ayant tout d'abord été considéré non pas comme un problème d'ordre médical, mais plutôt comme une question de morale et d'éthique sportives, l'argument le plus fort et le plus convaincant n'a pas non plus été apporté par la médecine, mais par la psychologie. Il s'agit là de l'essai du placébo. En partant du fait que les placébos, remède-attrape, sans aucun effet pharmacologique, pouvaient provoquer un effet thérapeutique, on analysa, au cours de différentes expérimentations critiques (Prokop), l'effet des placébos sur la performance sportive. Ces expérimentations semblaient nécessaires, étant donné le nombre de substances dopantes dont l'effet physiologique – si effet il y a – est minime. Afin de clarifier cet état de choses, plusieurs athlètes durent se soumettre à des contrôles d'ordre physiologiques et psychologiques ; après avoir pris de ces pilules dopantes factices, on assura aux athlètes que les pilules qu'on leur avait administrées contenaient un dopant à base d'une plante sud-américaine, utilisée par les indigènes pendant la chasse et pour la guerre et grâce à laquelle des athlètes auraient déjà gagné maintes compétitions – alors qu'en réalité on leur avait administré un mélange de talc et de sucre lactique. Lors des contrôles par un dynamomètre manuel, de la force de leurs mains, 63% des athlètes présentèrent une nette amélioration de leurs performances et grâce à des variations dans les méthodes de contrôle, on s'assura que l'amélioration des performances ne pouvait résulter de l'entraînement. Le même résultat fut obtenu lors de l'épreuve dynamique du « step test » : 72% des athlètes présentèrent une diminution de la fréquence du pouls, sous l'effet du placébo. La diminution de la fréquence du pouls, après un effort, équivaut à une rationalisation du fonctionnement du système circulatoire et par conséquent à une amélioration des performances, or une même fréquence du pouls aurait permis d'atteindre une meilleure performance.

Des résultats analogues ont été atteints lors des expérimentations d'ordre psychologiques. Le dépouillement statistique prouve qu'il existe un rapport positif, d'une part entre l'intelligence et l'effet du placébo et, d'autre part entre l'effet du placébo et la suggestibilité. En outre, le pourcentage des réactions était nettement plus fort chez les personnes d'un certain âge et chez les femmes. Ces deux faits ne nous surprennent guère et confirment les résultats généraux des enquêtes thérapeutiques. Après absorption de placébos, plusieurs athlètes prétendirent avoir des symptôme subjectifs – état d'ivresse, euphorie, vertige, bouffées de chaleur, palpitations, parésthésie et autres – sans toutefois que leurs performances accusent une régression réelle. En comparant l'amélioration des performances due à un effet de placébo et les résultats des expérimentations pour lesquelles on s'était servi de vrais stimulants, on peut noter que la comparaison est frappante. Ceci prouve qu'il s'agit d'effets autosuggestifs que l'on peut atteindre indépendamment de la substance administrée, et que l'effet des véritables substances dopantes – mis à part les remèdes de dopage massifs, tels que les narcotiques, les amphétamines et autres – ne diffèrent guère de celui des substances dopantes factices. Ces constatations prouvent que le dopage est non seulement dangereux, mais également inutile et insensé.

Tous ces aspects médicaux, psychologiques et pédagogiques du dopage qui dénoncent son imposture, gagnent encore de l'importance face au problème de la sauvegarde de l'idée olympique, l'idée grandiose du sport sera toujours remise en question et toutes les valeurs positives du sport risquent de disparaître très bientôt.

Methodes d'analyse

L'exposé suivant envisage une voie d'approche aux problèmes posés par le contrôle antidopage. Certes, les divers laboratoires appliquent chacun des méthodes légèrement différentes pour traiter ces problèmes, mais quelque soit la technique adoptée, il importe que tout résultat positif obtenu à la suite des examens de vérification préalables (dits de screening) soit suivi d'une série de tests destinés à identifier la substance ayant conduit à ce résultat positif. Le présent exposé résume la situation actuelle. Tout progrès effectué dans les méthodes d'analyse, en particulier les méthodes appliquées aux tests d'identification, conduira indubitablement à un perfectionnement du contrôle antidopage dans son ensemble.

Généralités

L'urine constitue, d'une manière générale, l'échantillon biologique le plus approprié à l'analyse visant à détecter l'abus de drogues. En effet, les concentrations de ces drogues sont plus élevées dans l'urine que dans le sang, et lors de l'analyse, l'interférence des constituants de l'urine est moindre que celle des constituants du sang (Beckett 1966 ; Beckett, Tucker et Moffat, 1967).

On déterminera tout d'abord le pH de l'urine dans les échantillons prélevés ; celui-ci, en effet, influe sur la quotepart d'excrétion de nombreux composés, c'est-à-dire qu'il résulte d'une urine acide une quote-part d'excrétion de composés basiques plus élevée et une quote-part d'excrétion de composés acides plus faible (Fig. 1, page 48). Pour une urine acide, le taux d'excrétion en 24 heures de méthylamphétamine, d'amphétamine et d'éphédrine est respectivement de 50, 70 et 80%, tandis qu'il est dans des conditions alcalines, respectivement de 5, 3 et 5%. Par conséquent, un échantillon d'une urine alcaline qui ne révèle, à l'examen, qu'une petite quantité de substance stimulante basique n'est pas la preuve que la concentration de stimulant dans le corps est faible.

Après des exercices physiques, l'urine est généralement acide. Il arrive cependant que des liquides alcalins soient absorbés pour neutraliser la fatigue associée à l'acidose, et que cette ingestion entraîne un pH alcalin de l'urine. Des différences d'habitudes diététiques peuvent également influer sur le pH de l'urine et, de ce fait, sur l'excrétion de substances qui, à un pH physiologique, sont partiellement ionisées (Fig. 2, page 49) Wesley-Hadzija, (1971).

Après administration orale d'un stimulant, le niveau maximum atteint dans le sang par celui-ci se situe généralement entre une et trois heures après la prise de la dose. Si donc un concurrent cherche à obtenir un avantage déloyal en utilisant un produit stimulant, il devra le prendre ½ heure au moins avant la compétition. Cela signifie que le prélèvement d'échantillons d'urine visant à détecter l'abus de stimulants pourra être effectué à n'importe quel moment après la fin de l'épreuve. La plupart des produits sont détectables dans l'urine plusieurs heures et parfois même plusieurs jours après leur usage. Il est donc important d'avoir enregistré tout traitement médical subi par le concurrent dans les deux jours précédant l'épreuve pour laquelle il est soumis au contrôle antidopage.

Le laboratoire de contrôle antidopage devra disposer d'échantillons de toutes les substances susceptibles d'un emploi abusif ainsi que d'un ample assortiment d'autres composés pouvant interférer avec certains des examens de vérification ou d'identification. Il conviendra en outre qu'il dispose des métabolites des produits rangés dans la catégorie des dopants. Dans bien des cas en effet, ces métabolites apparaissent dans l'urine en même temps que la substance-mère. Si, par exemple, on a fait un emploi abusif de méthylamphétamine ou d'éthylamphétamine, on trouvera dans l'urine non seulement les substances-mère, mais aussi leur métabolite amphétamine (Fig. 3, 4 et 5, page 50, 51, 52), ce qui permettra, dans bien des cas, de distinguer entre une substance ajoutée à l'urine et une autre ingérée, puis excrétée.

Les méthodes d'analyse employées pour déceler la présence de dopage devront être suffisamment exactes pour détecter à la fois la substance et les métabolites. Actuellement, on ne dispose pas encore de données complètes sur les métabolites de tous les produits susceptibles d'un emploi abusif. Si donc le résultat de l'analyse d'urine témoigne de la présence d'un produit stimulant et que d'autres composés non physiologiques sont visibles, il conviendra de faire prendre ce produit par une personne volontaire, afin de déterminer le taux d'excrétion de la substance-mère et d'établir que les autres éléments en présence sont bien ses métabolites.

L'aptitude à déceler dans l'urine un produit particulier dépend du degré d'exactitude de la méthode employée. A l'heure actuelle, il est établi que la présence dans l'urine de la moindre quantité d'une drogue interdite représente une infraction aux règles. Pour l'alcool cependant, certaines limites de concentration dans le sang ont été fixées et il n'y a infraction que si ces taux ont été dépassés.

Un point essentiel de cette méthode de contrôle antidoping consiste à envoyer à l'analyse, en même temps que les échantillons codés de l'urine des concurrents, des échantillons de contrôle également codés de personnes volontaires ayant absorbé des stimulants. Ce procédé garantira un contrôle de l'échantillonnage, de l'organisation et des méthodes d'analyse. Il permettra au laboratoire de fournir aux autorités compétentes un rapport d'identification correct et assurera par là l'entière confiance dans l'ensemble du contrôle antidopage de toutes les personnes concernées par ce contrôle.

On trouvera dans la figure 7, page 54, un schéma approprié de l'analyse. Celle-ci est divisée en deux stades:

Stade 1 :
Examens de vérification
(Screening)

Stade 2 :
Identification.

Analyse Stade 1
Examens de Vérification (Screening)

Pour ce screening préliminaire, on s'appuiera pour la plupart des substances principalement sur de chromatographie liquide en phase gazeuse. (CGL) et, en second lieu, sur la chromatographie de couche mince ou chromatographie sur papier. Pour les substances non volatiles, on emploiera la chromatographie sur couche mince. Avant l'analyse, on procédera à l'extraction de l'échantillon d'urine dans des conditions différentes. Les conditions typiques sont les suivantes :

Procédé d'extraction A

L'urine (1 à 5 ml) est introduite au moyen d'une pipette ainsi que 0,5 ml de solution à 20% d'hydroxyde de sodium dans un centrifugeur à bouchon en verre. Elle est ensuite extraite, au moyen d'un agitateur mécanique basculant, par 2×2,5 ml d'éther diéthylique. Fraîchement distillé, puis centrifugée. Les extraits éthérés sont transférés dans un tube à essai 15 ml à fine base conique. (Si du chlorure de sodium solide est ajouté à l'urine, une seule extraction par l'éther suffit.) L'extrait est ensuite concentré jusqu'aux environs de 50 µl dans un bain-marie à 40°. Cet extrait est utilisé pour l'analyse par CGL et CCM. Il est important de ne pas laisser la solution s'évaporer entièrement, ce phénomène entraînant une perte des substances les plus volatiles.

Procédé d'extraction B

L'urine (10 ml) est alcalinisée (pH 9 à 9,5) par addition de carbonate de sodium solide, puis extraite au moyen de 3 doses de 5 ml d'éther diéthylique fraîchement distillé. L'ensemble des extraits d'éther est concentré selon le procédé précédemment décrit, un soin particulier étant mis à ne pas laisser évaporer la solution à sec, puis analysé par CGL et CCM.

L'urine extraite est ensuite neutralisée, puis chauffée pendant une heure, additionnée de 2 mls d'acide chlorhydrique 6 N, à une température de 80 à 100°, afin d'hydrolyser les substances conjuguées. Après refroidissement, le pH est ajusté à 9 jusqu'à 9,5 par l'addition d'hydroxyde de sodium 6N et de carbonate de sodium solide. L'urine est alors extraite selon le procédé décrit précédemment et analysée par CGL et CCM.

CGL

3 à 5 μl environ du concentré ci-dessus sont injectés dans au moins 2 systèmes de contrôle différents de chromatographie en phase gazeuse. Des systèmes typiques (Beckett, Tucker et Moffat, 1967) sont représentés dans le tab. I, p. 57. En général, les procédés de vérification A et B conviennent parfaitement à la plupart des stimulants. Pour le décèlement des composés de poids moléculaire plus élevé, on peut également faire fonctionner ces systèmes à des températures plus hautes. A ce stade de l'analyse, un résultat positif se manifeste par la présence d'un pic chromatographique avec un temps de rétention comparable à celui d'une des substances interdites. Les données relatives aux temps de rétention de la plupart des composés interdits ont été publiées dans la littérature spécialisée, cf. p. ex. tab. II, page 58. Il importe de prendre comme référence la substance décelée en injectant un échantillon dans la colonne employée. On pourra, en outre, utiliser l'index de Kovats qui établit la corrélation entre les temps de rétention des diverses substances et les temps correspondants des n-alkanes pour les différentes colonnes. (Kovats 1958). Dans la chromatographie gazeuse de nombreux composés, on pourra utiliser à profit de nouveaux détecteurs sélectifs, comme les détecteurs d'azote, afin de réduire l'interférence de certains constituants de fluides biologiques (M. Donike et al. 1970).

CCM

On utilisera toute une gamme de systèmes de contrôle. Quelques procédés de vérification appropriés sont représentés dans le tab. III, page 62. On veillera à établir les valeurs Rf. des substances de référence pour les systèmes de CCM utilisés dans le laboratoire de contrôle. Les tâches représentant les substances pourront être localisées par toutes sortes de moyens (p. ex. voir Tableau III).

Stade 2 Identification A

Si les tests énumérés ci-dessus révèlent la présence d'une substance interdite, il faudra procéder à des tests supplémentaires utilisant la CGL et la CCM. En général, la CCM constitue une méthode d'analyse bien moins exacte et moins spécifique.

On pourra injecter l'extrait éthéré concentré obtenu au stade 1 dans d'autres systèmes CGL à des températures différentes. En outre, on procédera, dans la mesure ou cela est possible, à la formation de dérivés simples de la substance au moyen de doses d'extraits éthérés. On injectera ensuite dans les systèmes CGL des aliquotes des mélanges réactionnels obtenus, cf. p. ex. tab. IV, page 64 et Fig. 6, page 53. Des dérivés valables sont ici les bases de Schiff avec utilisation de divers cétones, les dérivés d'isothiocynate, les dérivés d'acétyle, de propionyle, de thrichloracétyle, de trifluoracétyle, d'heptafluorobutyryl et de triméthylsilyl.

Une méthode élégante pour l'identification des drogues volatiles consiste en la détermination des indices de Kovats sur deux colonnes de polarité différente et en le calcul de la différence d'indice. Ces valeurs seront comparées avec celles d'une substance authentique.

Dans la CCM, il est parfois bon également de procéder à la préparation de dérivés avant la chromatographie.

Dans la plupart des cas, l'application combinée des techniques décrites au stade 1 et 2 permet une identification sans équivoque de la substance contenue dans l'urine, à condition toutefois que l'on dispose des substances de référence et de leurs métabolites.

Identification B

Une autre technique d'identification fort importante est la combinaison des procédés CGL/spectroscopie de masse. Ici encore, il importe de disposer des substances de référence appropriées. Une technique moins onéreuse, mais néanmoins efficace, est représentée par la CGL par pyrolyse. Dans ce cas également, il est essentiel, si l'on veut employer cette technique dans le contrôle antidopage, que le laboratoire dispose des composés de référence et des données y relatives.

Si les urines révèlent de fortes quantités de produits, on pourra alors faire usage de la micro spectroscopie infrarouge avec CGL.

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Liste des substances dopantes

La liste suivante de substances dopantes a été approuvée par la Commission Médicale du CIO au cours de sa réunion du 19 mai 1971 à Munich.

a) Stimulants psychomoteurs, par ex.
amphetamine
benzphetamine
cocaine
diethylpropion
dimethylamphetamine
ethylamphetamine
fencamfamin
methylamphetamine
methylphenidate
norpseudoephedrine
phendimetrazine
phenmetrazine
prolintane
et substances dérivées

b) Amines sympathicomimétiques, par ex.
ephedrine
methylephedrine
methoxyphenamine
et substances dérivées

c) Divers stimulants agissant sur le système nerveux central, par ex.
amiphenazole
bemigride
leptazol
nikethamide
strychnine
et substances dérivées

d) Narcotiques analgésiques, par ex.
heroine
morphine
methadone
dextromoramide
dipipanone
pethidine
et substances dérivées

Cette liste n'est pas restrictive. D'autres substances dopantes peuvent y être ajoutées.

Procédure de contrôle adoptée aux Jeux de la XXe Olympiade Munich 1972 et aux XIe Jeux Olympiques d'hiver Sapporo 1972.

1 Choix des athlètes

1.1
Un nombre raisonnable de contrôles de dopage doit être effectué dans chaque sport.

1.2
Le nombre total des athlètes à contrôler quotidiennement sera déterminé par la Commission Médicale du CIO, en accord avec la Fédération Internationale concernée et avec le Comité Organisateur. Il faudra toutefois prendre en considération la capacité du laboratoire.

1.3
Tout en respectant le nombre total imposé – d'après le chiffre 1.2 – la Fédération Internationale concernée décidera pour les épreuves du sport qu'elle représente, du nombre d'athlète qui devront être contrôlés.

1.4
La Fédération Internationale concernée décidera également d'après quels critères chaque athlète devant se soumettre au contrôle sera sélectionné.

1.5
En cas de soupçon de dopage, la Commission Médicale du CIO se réserve également le droit de désigner d'autres athlètes pour le contrôle.

2 Procédé de prélèvements

2.1
Immédiatement après la compétition, voire dès la détermination du classement des concurrents, un représentant du Comité Organisateur invitera, par la remise d'une carte verte, l'athlète désigné à se rendre à la salle d'attente de la station de contrôle de dopage, dans l'heure qui suit, muni de sa carte d'identité.

La carte verte porte le numéro de dossard de l'athlète et mentionne que l'athlète peut se rendre à l'examen avec un accompagnateur, entraîneur, ou médecin, elle indique les conséquences qui pourraient s'en suivre si l'athlète refusait de se soumettre au contrôle dans les délais fixés (cf. chiffre 4). La carte comporte une partie détachable (souche) sur laquelle est également inscrit le numéro de dossard, ainsi qu'une annotation confirmant que l'athlète a pris connaissance de la requête du représentant.

2.2
Dès que le représentant aura inscrit l'heure sur la feuille et la souche, l'athlète devra signer l'annotation inscrite sur la souche.

2.3
Le représentant remettra immédiatement la souche au chef de la station de contrôle de dopage.

2.4
Si l'athlète n'arrive pas à la station de contrôle dans le délai requis (cf. chiffre 2.1), ceci sera consigné dans le procèsverbal. Ce dernier sera signé par le chef de la station et transmis immédiatement au président de la Commission Médicale du CIO par l'intermédiaire du directeur du contrôle de dopage. Le président de la Commission Médicale du CIO décidera des mesures à prendre.

2.5
Dès leur arrivée à la station de contrôle de dopage, l'athlète et son accompagnateur sont accueillis dans la salle d'attente par un représentant du Comité Organisateur.

2.6
Le représentant vérifie l'identité de l'athlète à l'aide de la carte d'identité et du numéro de dossard.

2.7
Pour les prélèvements, les athlètes sont appelés un par un dans le cabinet de consultation.

2.8
Dans le cabinet de consultation, outre l'athlète et son accompagnateur ne peuvent se trouver que :
un médecin en tant que chef de la station,
une assistante médicale, chargée entre autres du procès-verbal,
un représentant de la Fédération Internationale concernée,
un membre de la Commission Médicale du CIO,
le directeur du contrôle de dopage,
la personne chargée de faire les prélèvements,
un interprète.

2.9
Les renseignements personnels concernant les athlètes ainsi que l'heure sont consignés dans le procèsverbal.

2.10
L'athlète choisit lui-même deux des flacons approuvés par la Commission Médicale du CIO. Ces deux flacons doivent porter le même numéro de code (plus A ou B).

2.11
Sous la surveillance du médecin (pour les femmes, ce sera l'assistante) l'athlète remplit un flacon de son urine (50 ml au moins).

2.12
Si un athlète refuse de se soumettre à l'examen d'urine, on attire son attention sur les conséquences éventuelles qu'entraînerait sa décision (cf. chiffre 4.1). Si toutefois il persiste, son refus sera mentionné dans le procès-verbal. Le procès-verbal, signé par le médecin, l'assistante, l'athlète et s'ils sont présents l'accompagnateur ainsi que par le représentant de la Fédération, est ensuite envoyé immédiatement au président de la Commission Médicale du CIO par l'intermédiaire du directeur du contrôle du dopage.

2.13
Si, dans un laps de temps restreint, l'athlète ne peut pas uriner, ce fait sera noté dans le procès-verbal. Le président de la Commission Médicale du CIO décide des mesures à prendre en conséquence.

2.14
Immédiatement après le prélèvement, le médecin vérifie le pH de l'urine. Le résultat de cette constatation sera inscrit dans le procès-verbal.

2.15
Aussitôt, le médecin verse la moitié de l'urine dans le second flacon. Après quoi, les deux flacons seront plombés par le médecin.

2.16
Le médecin laissera l'athlète et son accompagnateur s'assurer que les flacons ont été scellés en bonne et due forme.

2.17
Le médecin inscrira le numéro de contrôle au procès-verbal. L'assistante laissera l'athlète et son accompagnateur s'assurer que le numéro de contrôle des deux flacons correspond au numéro de contrôle inscrit au procès-verbal.

2.18
L'athlète appose sa signature au bas du procès-verbal, confirmant ainsi que le prélèvement s'est passé en bonne et due forme. Le procès-verbal sera également signé par le médecin, ainsi que par l'accompagnateur, s'il est présent. Le procès-verbal sera mis sous pli et scellé.

2.19
L'enveloppe contenant le procès-verbal sera transmise au président de la Commission Médicale du CIO, par l'intermédiaire du directeur du contrôle de dopage.

2.20
L'assistante mettra les deux flacons plombés dans un récipient que l'on pourra fermer et plomber.

2.21
Avant le transport au laboratoire, l'assistante scellera le récipient.

2.22
Le médecin remet le récipient au coursier contre reçu.

2.23
Le coursier remet immédiatement le récipient au laboratoire.

2.24
Au laboratoire, la réception du récipient scellé sera assurée par une personne mandatée à cet effet par le chef du laboratoire.

3 Procédé d'examen

3.1
L'analyse d'un prélèvement doit, si possible, être faite dans les 24 heures suivant le moment où celui-ci est parvenu au laboratoire.

3.2
L'analyse comprend les étapes suivantes :

3.2.1 Screening :
Chromatographie en couche mince sur substance non volatile, chromatographie en phase gazeuse sur substance volatile.

3.2.2 Identification :

3.2.2.1
Chromatographie en phase gazeuse par deux piles de polarités différentes et formation dérivée avant l'analyse chromatographique en phase gazeuse ou la détermination des indices de Kovat. Il est également possible de procéder à une chromatographie pyrolytique en phase gazeuse.

3.2.2.2
Alternative au chiffre 3.2.2.1 :
Chromatographie (en couche mince ou en phase gazeuse) combinée avec la spectroscopie des masses ou la spectroscopie infrarouge.

3.2.2.3
La présence d'une substance est considérée comme déterminée quand les données relevées dans l'urine sont comparables à celles

existantes dans un matériel valablement identique.

3.3

Sont admis à pénétrer dans le laboratoire en plus du chef du laboratoire et de son personnel : les membres de la Commission Médicale du CIO, des personnes ayant reçu une autorisation spéciale du président de la Commission Médicale du CIO, le directeur du contrôle de dopage.

3.4

Si l'analyse est positive, le chef de laboratoire en informe immédiatement le président de la Commission Médicale du CIO, par l'intermédiaire du directeur du contrôle de dopage et communique sous 48 heures, les détails de l'analyse qui a donné un résultat positif.

3.5

Ensuite, le président de la Commission Médicale du CIO convoque immédiatement une réunion et y invite également le médecin responsable ou encore un autre représentant de la délégation et un représentant de la Fédération Internationale concernée, ainsi que le directeur du contrôle de dopage.

3.6

Dans les 12 heures qui suivent la communication du résultat positif de l'analyse, le chef de mission de la délégation à laquelle appartient l'athlète, peut demander – par écrit – au président de la Commission Médicale du CIO, une vérification des résultats au moyen du 2ème flacon.

3.7

Le contrôle se fait dans le même laboratoire, toutefois le personnel chargé de l'examen ne sera plus le même. Le contrôle sera éxécuté sous la surveillance d'un des membres de la Commission Médicale du CIO. La délégation concernée est autorisée à envoyer un observateur au laboratoire.

3.8

Le membre de la Commission Médicale du CIO transmet le résultat de l'enquête au président de la Commission Médicale du CIO qui, de son côté, informe le chef de la délégation à laquelle appartient l'athlète.

3.9

Les résultats de cette enquête sont irrévocables.

4 Sanctions

4.1

L'athlète qui se refusera au contrôle de dopage ou qui aura été déclaré coupable de dopage se verra, sur proposition de la Commission Médicale du CIO, exclu des Jeux Olympiques par la Fédération Internationale concernée.

4.2.1

Si l'athlète fait partie d'une équipe, le match ou la compétition en question sera considérée comme perdue.

4.2.2

Compte tenu des déclarations de cette équipe et après avoir discuté le cas avec la Fédération Internationale concernée, l'équipe ayant un ou plusieurs membres coupables de dopage peut être exclue des Jeux Olympiques.

4.2.3

Dans certain sports, dans lesquels les équipes ne peuvent plus participer en tant qu'équipes après l'exclusion d'un des athlètes, le reste des athlètes peut, à titre individuel, continuer à participer aux compétitions.

4.3

Le retrait d'une médaille est décidé par la Commission Exécutive du CIO sur proposition de la Commission Médicale du CIO.

4.4

Les règlements mentionnés cidessus ne préjugent pas d'éventuelles sanctions plus sévères que pourraient infliger les Fédérations Internationales.

2

The Problem of Doping

The merciless rigour of modern competitive sport, especially on the international level, the glory of victory, and the growing social and economic reward of sporting success—in no way any longer related to reality—increasingly force athletes to improve their performance by any means available.

Not least of all is the underlying "national tendency" to increase competitive performance so that victory for one's own country can be attained at any price. Natural and physiological possibilities of improving performance by means of normal training methods and appropriate conditioning have already been largely developed or have not achieved the desired results, and many athletes are neither capable nor inclined to suffer continued deprivation or denial.

It is thus natural that other methods of attaining sporting victory are considered, and it is somehow understandable that the athlete then resorts to "more convenient" means, particularly if he believes he can improve his performance with a few pills. These practices, which are intended to achieve an artificial increase in capability and virtually amount to preparation for competition through medication, are generally known today under the term of doping.

It Began in Ancient Days

Man's efforts to artificially improve his capabilities and thus his chances in battle and sport are age-old. Methods which are today designated as doping, and the attempts to prevent them, can be traced far back into history. Even the athletes in the ancient Olympic Games at the end of the 3rd century B.C. are said to have tried to improve their achievements by any means possible, as reported by Phylostratos and Galen. However, only since the second half of the 19th century are there verified examples of unquestionable doping in sports. Thus in 1865, Pini reports on a doping case among canal swimmers in Amsterdam.

When the famous Six Day Cycle Races were held for the first time in 1879, racers of the various nationalities already had all sorts of miracle products on hand in order to last through the strenuous competition. French racers preferred mixtures based on caffeine, the Belgians sugar soaked in ether; others used drinks containing alcohol, while the sprinters specialized in the use of nitroglycerine. Trainers were already regular drug mixers in those days, producing wonder products out of heroin and cocaine. In 1886 the first doping fatality caused by an overdose [redacted]. At the Bordeaux–Paris cycle race of 600 km, the English cyclist Linton died after excessive doping by his manager, the owner of a bicycle firm. Somewhat later Belgian and English soccer teams made the first attempts to better their performance with oxygen, as was first reported in 1908. In boxing, too, there were already doping cases using strychnine pills and mixtures with brandy and cocaine. Here first appeared the problem of "doping to lose", the administering of drugs to opponents to impede performance. Thus in 1910, after being kayoed by Jack Johnson, James Jeffrie asserted that his tea had been doped. In the meantime this method of manipulation, today known as paradoping or antidoping, has become a popular excuse for doping offenders who have been discovered.

In 1889, the word doping first appeared in an English dictionary, defining a mixture of opium and narcotics as used for horses. However, the root of this today common word does not stem from English, as is incorrectly supposed, but can be traced back to a dialect spoken by native Kaffirs in southeast Africa, which was subsequently adopted into the Boer language. The word "dop" then meant a local "schnaps" or hard liquor which was used by the Kaffirs as a stimulant at worship. Only later was the term broadened to apply to other stimulating drinks. Through its increasing and consistent practice, the doping of horses and dogs has, in all likelihood, been a major pacesetter for the doping used in sports today.

The first scientific proof of doping was established in Austria in 1910. Disturbed by several unexpected race results, the Austrian Jockey Club summoned to Vienna the Russian chemist Bukovski who could actually find proof of alkaloids in horse saliva. Since he did not reveal his methods, the Vienna University professor, Dr. Sigmund Fränkel, later developed his own method of identifying alkaloids in horse saliva. On the basis of this technique, 218 saliva tests were conducted as early as 1910 and 1911, and the appropriate sanctions were filed against the trainers. Fränkel's pioneer achievement encouraged Kaufmann in Paris as well as other chemists and doctors, so that it was possible to reduce the doping scandals in horse-racing to a great extent. Only in America, where modern horse-doping actually originated, was nothing undertaken for a long time against the excesses of this stimulation. According to existing reports, in the pre-war years around 30 to 50% of all horses participating were still being doped. In the meantime the circumstances have fundamentally changed because of regular controls. According to the Association of Official Racing Chemists, nowadays only 1% of all horses are doped.

Meanwhile human medical science also discovered an interest in medicines and substances improving performance and tested these in comprehensive series of experiments. Thus in 1919 Emden conducted an extensive investigation of the ameliorating effects of phosphorus compounds. Many others studied the pharmacological effects of benzedrine and in 1934, the first clinical observations of benzedrine were finally made. In Germany Hauschild developed pervitin, which was eventually used, as was methedrine in England, for night flights, long marches and other endurance requirements during the war years of 1939–1945.

By 1933, the word "doping" had attained such general usage that it also appeared in specialized dictionaries (such as Beckmann's Sport Dictionary). Schönholzer, Demole, Knoll, Prokop and others supplied the first definitions in which, in addition to the medical aspects of doping, the moral-ethical point of view was increasingly advanced. However, the athletes and assistants, as well as doctors who have an interest in doping, have nevertheless repeatedly been able to create confusion and disguise or justify the administering of drugs by simulating ignorance or purposely misreading the doping regulations.

Doping Even at the Olympic Games

From around 1950, cases of doping noticeably increased. At the Winter Olympics in Oslo in 1952 many broken ampoules and syringes were found in the changing rooms of the speed skaters. Cycling has been a particular hotbed of doping practices. In the 1955 Tour de France, on the Mont du Ventoux leg, Mallejak suffered a fainting spell and was subsequently accused of doping. At a cycle race in April of the same year, 25 urine tests were conducted, of which 5 were positive.

In 1956 a racer was taken to the psychiatric clinic at Montello in a state of mental confusion after using amphetamines. Lothar Alpler in the world championship amateur road race, Nielsen in the professional motor-paced race in Zurich, Fritz Gallati and many others were discovered taking amphetamines, and were in some cases also punished. For several years at the Tour d'Autriche, Austrian, Polish, and Dutch racers were disqualified because of proven use of amphetamines. Some racers carried up to 18 amphetamine tablets in their jerseys. Others, such as Scheepers of Holland, were nevertheless treated as heroes and martyrs in their homelands, while the doctors who conducted the tests were maligned.

Cases of collapse after doping with sympathomimetic substances, especially amphetamines, have also been reported by the American Medical Association (AMA), but without any measures having been taken against the doped athletes and their backers. Many of the first steps taken had no success, as in Helsinki at the 1952 Olympic Games where a random sampling of the marathon runners' food was made.

Fatal Cases Sound the Alarm

It required several fatalities to make public opinion aware of the urgency of the problem. Thus a 25-year old cyclist fell victim to an overdose of drugs after taking eight phenylisopropylamine and fifteen amphetamine pills with a thermos of coffee. Better known is the case of the Danish cyclist Knut Enemark Jensen who collapsed at the 1960 Olympic Games in Rome after a fatal dose of amphetamines and nicotinic acid compound was given to him by his trainer. In 1957, the American Medical Association established that the amphetamine "pep pills" used originally by students before examinations had found wide usage in sports, too. In 1958, the American College of Sports Medicine reported on an examination of 441 trainers, coaches, and assistants, of which 35% had had personal experience with benzedrine or at least knew how to use it, while only 7% knew nothing about its use.

The growing commercialization of sport explains the increasingly close connection between doping and professionalism. Thus doping with amphetamines has also become more prevalent in football. Delezenne reported on a player accused of roughing the referee who countered with the defense that he had acted under the influence of drugs given to him before the game. However, a large number of these cases is not punished, as the offenders always manage to establish special connections with the officials or point to poor procedure, ambiguity in regulations, or sabotage. Unfortunately, in these cases as in cycling, the so-called sports doctors often play a part that is scarcely laudable. In addition, in many countries those responsible are not powerful enough or do not dare take strong action against well known athletes, since they do not want to become unpopular. Also, the financial strain on some officials is so great that the business interests of some of the strong backers, chiefly in industry, are placed above all sporting rules. Thus the way is clear for widespread use of drugs. In a survey of the Italian football organization in 1961 the alarming discovery was made that 17% of all players took psychotonics and 94% of the A-league clubs used some sort of drug even for training.

There have also been doping scandals in boxing. The welterweight fighter Billy Bello died of heroin poisoning in 1963. Bantamweight Edmundo Esparso entered the ring doped in Mexico City and was barred from competition for three months. Dick Howard, third in the 400 m hurdles at the 1960 Olympics, died of an overdose of heroin.

Not even tennis has remained untainted. In 1961, playing in the Davis Cup against the Englishman Billy Knight, Andres Gimeno was accused of receiving a large injection of testosterone. An inevitable result of these occurrences was a wave of denunciation and suspicion of top athletes, in which the tabloid press played a very shady role. Even some Olympic champions have been accused of improving their condition with injections before the race.

Finally there occurred the case of the British cyclist Simpson who, after taking amphetamines, collapsed during the Tour de France because of the great exertion and the effects of the sun. Like the German boxer Jupp Elze, he died as a result, giving decisive impetus to an energetic battle against doping.

Organized War on Doping Begins

However, some doctors who were more aware of their responsibilities at last mobilized public opinion for the battle against doping, despite attacks by the tabloid press, and were of definite assistance in the founding of the first doping commission. In 1959, the ANEP (Association Nationale d'Education Physique) formed a doping commission in France. In the same year the International Sports Medicine Congresses in Paris and Evian were devoted primarily to the problem of doping. Measures were called after this problem had been discussed at various sports medicine congresses and inquiries (Zurich and Weimar 1955, Hamburg 1957), but it was treated more or less as an interesting phenomenon of no immediate importance.

In 1962, the Italian Sports Doctors Association (FMSI) organized a doping inquiry, and during the same year in Moscow the IOC passed a resolution against doping. But owing to a lack of appropriate disciplinary powers, decisive success was not achieved. The Italian Football Union created a commission to combat doping, whereupon the various football clubs immediately established a service to give timely warning of the commissions. Nevertheless in Bologna five players were again found guilty of doping.

Specific anti-doping measures were initiated by the Austrian government. The Federal Ministry of Education set up a doping commission, and in its own regulations of September 30, 1962, threatened all doped athletes and their associations with severe sanctions, such as cancellation of all subsidies and exclusion from use of public sports installations etc.

A particular official impetus for the war on doping came from the Council of Europe, which convened an expert commission in Strasbourg in January 1963. Since the first attempts to implement anti-doping measures had shown that the greatest problem for efficient anti-doping action would be a clear definition of the term of doping, such a definition was developed at the outset and reads as follows:

"Doping is defined as the administering or use of substances in any form alien to the body or of physiological substances in abnormal amounts and with abnormal methods by healthy persons with the exclusive aim of attaining an artificial and unfair increase of performance in competition. Furthermore various psychological measures to increase performance in sports must be regarded as doping."

The mention of extreme psychological measures in the sense of hypnosis, which make athletes a sort of robot under remote control, appeared necessary at that time in view of certain manipulations of Australian swimmers, English football players, and other athletes. It was later dropped, however, since it was impossible to establish exact proof of such practices. In the same year the definition was confirmed by the first European Doping Colloquium in Uriage and by the Sports Doctors Congress in Barcelona.

The First Official List of Doping Substances

Because the central practical problem was the difficulty of drawing a distinction between doping and medically prescribed treatment with stimulants, the next meeting of the European experts in Madrid in November 1963, passed an amendment to the effect that:

"Where treatment with medicine must be undergone, which as a result of its nature or dosage is capable of raising physical capability above the normal level, such treatment must be considered as doping and shall rule out eligibility for competition."

Attached to this definition was a list of drugs regarded as doping substances, including narcotics, amine stimulants, certain alkaloids such as strychnine and ephedrine, and as a rule all analeptic agents, respiratory tonics and certain hormones.

At other UNESCO Congress in Geneva and Brussels in 1964, the World Congress for Doping during the Olympic Games in Tokyo 1964, the second National Congress for Sports Medicine in Chile, numerous national symposia held in Germany, Austria, Italy, Switzerland, England, and finally another Congress of the Council of Europe in Strasbourg in September 1965, the responsible sports and government authorities were called on to take strong measures in order to stop the menace to the health and moral welfare of athletes which doping creates.

Meanwhile in November 1964, a bill was submitted to the French Senate forbidding the misuse of pharmacological substances for doping, and prescribing imprisonment of up to one year as well as disqualification and fines. This bill was accepted unanimously, and in 1965, the antidoping law became effective. But there were still difficulties in practical administration, due to the lack of precise regulations for implementing this law.

Belgium followed with its antidoping act of April 2, 1965. However, in many countries such a law has been difficult to enact for constitutional reasons, or has been turned down with the explanation that unlawful possession, sale or use of addictive drugs is already subject to heavy penalty under national drug legislation. Supported by international agreements such as the International Opium Treaty 1831 and the Hague Opium Pact 1921, as well as similar agreements by the World Health Organization, the laws of the individual countries provide severe punishments, from high fines to ten years imprisonment, for such violations.

But again and again it is precisely doctors who are surprisingly generous with these drugs, distributing them either out of commercial considerations or inappropriate chauvinism. Those doctors who deliberately permit interference also violate medical and purely human ethics. Unfortunately this mentality is often still promoted today by sports officials who see sports competitions on the international level in terms of national prestige, and the total commitment of man and the sacrifice of his health to the glory of his country as an obvious national obligation. Without question, significant success has been attained through the energetic steps taken over the past 15 years by governments and international federations, of which many already have doping commissions. According to Dirix the number of positive cases among cyclists tested decreased from 25.5% in 1965 to 20% in 1966 and 8% in 1967. In Italy Venerando reported that the number of doping cases among cyclists examined from 1965 to 1968 diminished from 32.94% to 2.7%. In football, too, Italy's determined campaign and public information policy has produced results.

While, as Ottani reported, in 1961, 27% of the cases examined were still positive, in the years 1963–1964 there was not one single case of amphetamine usage found among the players tested. Also, checks carried out during the World Football Cup in England in 1966 and in Mexico in 1970 produced negative results. Interestingly, however, the decrease of positive cases among amateurs is very slight in comparison to professionals. The emphasis has also partially switched from amphetamines to the somewhat less harmful substances such as ephedrine and certain analeptics. However, these are taken in such quantities that once again real medical problems are raised.

Intervention by the International Olympic Committee

Very significant in sport was the re-establishment in 1967 of the IOC Medical Commission, chaired by Prince Alexandre de Merode, which conducted its first routine examinations at the 1968 Olympics in Grenoble and continued its work during the 1968 Games of the XIXth Olympiad in Mexico.

Because of greatly differing interpretations of the list of doping substances, the standards applied to the individual athletes vary considerably and do not always accord with the rules of the Olympic Games. Nevertheless, in collaboration with the international sports federations, the IOC conducted almost 1,000 doping tests and disqualified those violating the regulations. The doping rules are being standardized in the international federations and some, such as the Rowing Federation (FISA) and the Athletics Association (IAAF), are adopting the fundamental IOC regulations.

Nowadays the anti-doping campaign is also simplified by a recently perfected procedure of urine sample and analysis by means of thin-layer and gas chromatography. Efforts to develop international standardization of the detection of doping substances, particularly on the part of Beckett, constitute another significant contribution to doping control. Thus since 1969, scientific symposia have been held which are intended to work out an international standard for analysis methods.

From the medical and biological points of view, doping is an unnatural and in some cases highly dangerous way for winning what is, in the last analysis, only a Pyrrhic victory.

Nevertheless, the medical aspects of doping rank second to the ethical considerations of sporting fairness, since doping need not be detrimental to the health but is always unfair and contrary to all sporting morality. In practice, doping today has a relatively broad and comprehensive meaning. Furthermore, the simple replacement of missing or expended body matter such as glucose, calcium, lecitin, phosphate, protein compounds and vitamins, is no longer regarded as doping, even when administered by injection before the competition.

The action of the doping substances now most often employed is highly complex, and their influence on the physical standard of performance is usually very uncertain or precarious. Furthermore, there is no doping medication known that does not also have other harmful side effects in which the dosage, of course, plays a decisive role. Specific effects on organs leading to an increase of capability can only rarely be isolated. This is especially true of a genuine increase in muscular strength, endurance, and an improvement of coordination. Most drugs lead only to central disinhibition and thus psychogenetic stimulation. Such action occurs predominantly among older athletes who, as a result of somewhat unpleasant experiences and injuries, have over the years acquired numerous conscious and unconscious inhibitions which then hold them back from fully using their strength. If these inhibitions are removed by a drug, a better performance usually results. However, various necessary and useful physiological restraints intended to prevent over-exertion are removed at the same time. This applies above all to the sensation of fatigue which is a physiological safeguard both against overtaxing the motor system and circulation, and against a total and thus fatal reduction of the energy substances and the energy-mobilizing hormone and enzyme systems.

Since youthful athletes are more inclined to give all they have got during competition, and have not yet had any inhibiting experiences, they can also exert themselves more fully. For this reason almost all examinations show that drugs have the effect of improving performance in these age groups. For the older athletes who take drugs there is often a very great difference between the subjective assessment of their own capacity to perform and their objective performance as measured by the functioning of the motor system, the circulation, and the metabolism. Yet paradoxically, the total performance is sometimes slightly improved by the psychic stimulation, although organically a distinct decrease in performance is evident. This discrepancy is generally observed under the influence of alcohol, nicotine, and particularly all those substances which engender a certain euphoria and thus make self-critical evaluation more difficult.

Diminished Performance and a Serious Threat to Health

It is characteristic of most drugs that, after a certain stage of improvement in performance, a sharp decrease follows as a reaction. The uncontrollable counteractions of the body, at the time often incalculable, are dangerous and above all greatly prolong the period of recuperation. Since the action of most doping substances is uncertain and is decisively determined by the particular initial vegetative condition, the effect often varies greatly.

Thus, as experience has shown, there are very often difficulties with the dosage. Since decided habituation occurs, particularly in the case of the purely stimulating substances, the dosage must usually be continually increased. A toxic dosage is thereby often attained which leads to severe poisoning and sometimes to fatal collapse. It becomes especially dangerous when further strain is added by other medications, such as vasodilative substances, or by exhausting exertions and extreme climatic conditions, such as severe heat or sunshine.

With habituation or addiction, which sooner or later occur with narcotics and amphetamines, the athletes come to depend more and more on the effectiveness of the drug and neglect the physiological competition preparations and training, so that they soon decline not only in health and morale but also in their sport.

[redacted] of attack in the vegetative nervous system, in addition to their central stimulating effect and the resulting elimination of fatigue. These drugs, as well as some of a different pharmacological nature which act similarly (such as ephedrine), are so-called sympathomimetics. In other words, they increase the tonicity of the sympathetic nerve which must be active in any great exertion. But the recovery assisting parasympathicus or vagus nerve is simultaneously switched off, so that the performance control and the capacity of recovery constantly deteriorate. Furthermore there are various disturbing and in some cases very onerous effects, such as a high pulse rate and blood pressure, pallor, increased perspiration, tonicity increase in the skeletal musculature, over-excitability, nervousness, upset digestion, and disturbances in the sexual sphere. In principle these are the same symptoms which appear as a result of over-training. Thus in any over-training, the attempt to improve capability with amphetamines stimulating the sympathetic nervous system is an additional strain on the entire body and a great threat to the health. If there are additional stresses such as result from a large amount of vasodilator drugs which are often used to improve the supply of blood to the muscles, the circulation will be overtaxed and a severe collapse may result.

Such a collapse mechanism is known to have been responsible for the death of the cyclists Jensen and Simpson. Other doping substances, such as strychnine, which is often used for feats of strength and speed, increase the muscular tonicity to such a degree that only a slight overdose is needed to cause a general muscular cramp, which like tetanus can lead to grave complications in the circulation.

Typical of the doped athletes is his psychic behaviour. The athlete often gives the impression of being intoxicated. He is hardly responsive, has glassy eyes and resembles a sleepwalker or a drunkard. Some in turn are confused, show balance disturbance, reel around, speak thickly and incomprehensibly, and later even have memory lapses in the sense of true amnesia. Sometimes they are highly manic or euphoric, exaggerated and uncoordinated in their movements, or they are distinctly aggressive.

When they are not under the influence of their habitual drugs they are unfriendly, bewildered, incommunicative, irritable, and lacking in motivation. In addition there are the specific effects of the drugs used, such as pallor and sweating hands with the sympathomimetic amines, and narrowed pupils with morphine, and numerous similar effects. Taking the drug regularly causes the athlete to become an addict and often opens the road downhill. Thus it is understandable that the athlete, like a drug-addicted criminal, becomes a spineless tool in the hand of irresponsible business-minded assistants or managers from whom he receives the drug without which he cannot continue.

A very difficult problem is that of the evaluation of the "muscle-building" anabolic steroids which are taken in large doses in some sports nowadays. Anabolic drugs can severely harm the health, causing liver and bone damage, disturbances in the metabolic and sexual functions, and among women virilization and menstruation upset; but their inclusion in the doping list creates problems. Firstly, definite proof is very difficult to obtain and cannot yet be satisfactorily established. Secondly, this group cannot be detected with certainty if discontinued two or three weeks before the test, even if taken for many months beforehand with definite assistance resulting to muscular hypertrophy.

Just as doping is not primarily a medical problem but rather one of sporting morality and ethics, the strongest and most convincing argument against doping comes not from medicine, but from psychology as a result of placebo tests. Based on the proven fact that placebos, i.e. pseudo-drugs with no pharmacological effect, can have considerable therapeutic results, the effects of placebos on sporting performance were made the subject of a critical analysis (Prokop) in a long series of tests. These were called for largely because nowadays numerous drugs are employed for improving sports performance whose physiological value, if it exists at all, must be considered minimal.
To clarify this matter, a large group of top athletes underwent certain standardized physiological and psychological tests of their performance, after being given these "fake" pills. Those undergoing examination were told that the tablets, made of talcum and lactose, were a drug from a South American plant, used by the Indians to increase their ability in war and hunting, which had already aided famous athletes in setting world records. In the subsequent examination of the crude strength in both hands, tested with a hand dynamometer, the results among 63% of the test subjects showed a significant improvement in performance compared to the control tests.

All training could be eliminated as a source of this improvement, as appropriate variations were made in the tests. The same result was found in dynamic exertion by means of a "step test". Here a significant decrease of the pulse rate was discovered in 72% of the persons undergoing the placebo experiment. This reduction of the pulse rate after exertion equals an improvement of the efficiency of the circulatory system resulting in improved performance, since a better performance could doubtless have been achieved with the same pulse rate. Similar results were obtained in the psychological tests. The statistical evaluation showed that a significant positive connection exists between intelligence and placebo effects and between placebo effects and suggestibility. Because of general therapeutic experience, this is as much to be expected as the observation that the proportion of reactions among female and older examinees was especially large. After taking placebo, several athletes showed alleged symptoms of various kinds including intoxication, euphoria, dizziness, feverishness, heart palpitations, paresthesia and others, without showing any reduction of effective performance.
If one compares the extent and scope of the improvement from placebos with the results of similar tests with real doping substances, a striking similarity becomes apparent. This shows that the action of most genuine drugs is no more than that of a simple imitation substance, i.e. that an autosuggestive effect is involved which, with the exception of a few powerful drugs such as narcotics and amphetamines, can be attained independently of the substance administered. This observation clearly shows that doping is not only dangerous, but in principle also unnecessary and consequently foolish.

All of these aspects, risky from the
medical, psychological, and pedagogical points of view, which show
doping to be dangerous deception,
become particularly significant with
regard to preserving the purity of the
Olympic Idea. If it is not possible
to eliminate doping from Olympic
sports, there is the great danger that
the splendid idea of sport will
be ever more contested, and that
all its positive values will soon
be lost to man.

Methods of Analysis

The following account represents a suggested approach to the problems of doping control. Different laboratories deal with the problems in slightly different ways but, whatever techniques are adopted, it is important that after a positive result is obtained in the screening tests, then a variety of tests should be applied to establish the identity of the substance yielding the positive result. The present account summarizes the present situation; advances in methods of analysis, especially for application in tests for identification, will undoubtedly lead to improvement in the overall methods of doping control.

General

In general, urine is the most convenient biological sample to use for analysis for the misuse of drugs, because higher concentrations of the drugs are found in urine than in blood and there is less interference, in analysis, from constituents in urine than from those in blood (Beckett 1966; Beckett, Tucker and Moffat, 1967).

Urinary pH should be determined in the samples collected because urinary pH affects the rate of excretion of many drugs, i.e. acidic urine leads to a higher rate of excretion of basic drugs and a lower rate of excretion of acidic drugs. (Fig. 1, page 48). The amounts of drug excreted in acidic urine in 24 hours of methylamphetamine, amphetamine and ephedrine are 50, 70 and 80% respectively, but under alkaline conditions are 5, 3 and 5% respectively. Consequently, a result on a urine sample which is alkaline and is found to contain only a small amount of a stimulant basic drug, does not mean that the concentration of the drug in the body is low.

Normally, after physical exercise, urine is acidic but sometimes alkaline liquids are drunk to counteract fatigue associated with acidosis, and this ingestion may lead to alkaline urinary pH. Different dietary habits can also affect the pH of urine and thus the excretion of drugs which are partially ionised at physiological pH. (Fig. 2, page 49); Wesley-Hadzija (1971).

After an oral dose of a drug, the peak level of drug in the blood is usually between one and three hours after the dose is taken. Thus, if a competitor seeks to gain an unfair advantage by using a stimulant drug, he will take it at least half-an-hour before the competitive event. Therefore, in taking urine samples to detect the misuse of drugs, any convenient time after the end of the event for urine collection may be used. The majority of drugs can be detected in the urine many hours and sometimes days after they have been used. It is therefore important to have recorded any medical treatment that the competitor has received within two days of the event in which he is tested for doping control.

The doping control laboratory should have available, as standards, all the compounds which may be misused and also a wide range of other drugs which may interfere with some of the screening or identification tests. Furthermore, it is desirable to have available metabolites of the drugs classed as dope, since in many cases they will appear in the urine along with the parent drug. For instance, if methylamphetamine or ethylamphetamine have been misused, then not only will the parent drugs be found in the urine but also their amphetamine metabolites (Figs. 3, 4 and 5, pages 50, 51 and 52), thus one can frequently distinguish between a drug added to urine and one which has been ingested and excreted.

The analytical methods used to detect doping should be sufficiently sensitive to detect both drug and metabolites. At present, the information on metabolites of all the drugs being misused is not available. Therefore, if a positive result is found in urine for a drug and other non-physiological compounds are observed, it is important to have the drug taken by a volunteer to establish the excretion of the parent drug and that the other materials present are metabolites.

The ability to detect a particular drug in urine depends upon the sensitivity of the method being employed. At present, it is concluded that the presence of any quantity of proscribed drug in the urine represents a breach of the rules. In the case of alcohol, however, limits of concentration in the blood have been designated and an offence only occurs if these drug levels are exceeded.

As part of this doping control procedure, it is essential to forward coded control samples from volunteers who have taken drugs along with the coded samples of the competitors' urine. This procedure ensures a check on sampling, organisation and analytical procedures since the laboratory will be reporting correct identification of drugs to the appropriate authorities and thus ensuring that all concerned with doping control have complete confidence in the totality of the control.
A suitable scheme of analysis is outlined in Fig. 7, page 54, in which the analysis is divided into two stages:

Stage 1
Screening

Stage 2
Identification.

Analysis Stage 1
Preliminary Screening

For preliminary screening, reliance is placed primarily on the use of gasliquid chromatography using a number of GLC systems and, secondarily, on thin layer or paper chromatography. For non-volatile substances, thin layer chromatography is used. Before analysis, however, it is necessary to extract the urine sample under different conditions. Typical conditions are as follows:

Extraction procedure A
Urine (1 to 5 ml) is pipetted into a glass-stoppered tube together with 0.5 ml 20% sodium hydroxide solution. The urine is then extracted with 2 × 2.5 ml freshly distilled diethyl-ether using a mechanical tilt-shaker, centrifuged and the ethereal extracts transferred to a 15 ml Quickfit test tube with a finely tapered base. (The addition of solid sodium chloride to the urine results in only one ethereal extraction being required.) The extract is then concentrated to about 50 µl on a water bath at 40°. This extract is used for GLC and TLC screening. It is essential that the solution be not allowed to evaporate completely because this leads to loss of the more volatile drugs.

Extraction procedure B
Urine (10 ml) is made alkaline (pH 9 to 9.5) by the addition of solid sodium carbonate and then extracted by 3 × 5 ml portions of freshly distilled diethyl-ether. The combined ether extracts are concentrated as above, taking care that the solution is not evaporated to dryness, and is then analysed by GLC and TLC.

The extracted urine is then neutralised and heated at 80 to 100° with 2 ml of 6N hydrochloric acid for one hour to hydrolyse the conjugated drugs. After cooling, the pH is adjusted to 9 to 9.5 by the addition of 6N sodium hydroxide and solid sodium carbonate. The urine is then extracted as above and analysed by GLC and TLC.

GLC
Approximately 3 to 5 µl of the above concentrates are injected into at least two different gas chromatographic systems; representative systems (Beckett, Tucker and Moffat, 1967) are shown in Table I, page 57. In general, systems A and B are very useful for most stimulant drugs. The systems may be operated at higher temperatures to screen for compounds of higher molecular weight. A positive result at this point of screening would be indicated by the presence of a chromatographic peak with a retention time comparable to that of one of the forbidden drugs. Information on retention times of most of the forbidden drugs has been published in the literature, e.g. see Table II, page 58.

It is important to use, as a reference, the drug which is indicated by injecting a sample of it on to the column being used. In addition, use may be made of the Kovats index in which retention times are related to those of n-alkanes on various columns (Kovats 1958). New selective detectors may be used to advantage, e.g. nitrogen detectors, in the gas chromatography of many drugs to reduce interference from some constituents of biological fluids.

TLC

A variety of systems should be used; some suitable ones are shown in Table III, page 62. It is important to establish Rf values for reference drugs on the TLC systems being used in the control laboratory. The spots representing the drugs may be located by a variety of means (e.g. see Table III).

Stage 2 Identification A

If the presence of a forbidden drug is indicated in the above tests, then it is necessary to carry out further tests using GLC and TLC. In general, TLC is a much less sensitive and specific method of analysis.

The concentrated ether extract obtained in Stage 1 may be injected into additional GLC systems at different temperatures. Also, if it is possible to form simple derivatives of the drug, this should be carried out on portions of the ethereal extracts and then aliquots of the reaction mixtures injected into the GLC systems, e.g. see Table IV, page 64 and Fig. 6, page 53. Derivatives worthy of consideration are Schiff's bases using various ketones, isothiocynate derivatives, acetyl, propionyl, trichloracetyl, trifluoroacetyl, heptafluorobutyryl and trimethylsilyl derivatives.

A valuable procedure for identifying volatile drugs consists in the determination of the Kovats indices on two columns differing in polarity and the calculation of the index-difference. These values will be compared to those of the authentic substance.

In TLC, the preparation of derivatives prior to chromatography can also be useful.

In most cases, the use of Stage 1 followed by Stage 2 can lead to the unequivocal identification of the drug in the urine if the reference drugs and their metabolites are available.

Identification B

A very important further confirmatory technique is combined GLC/Mass Spectroscopy. Again, it is necessary to have suitable reference compounds for this work. A less expensive but nevertheless useful technique is pyrolysis GLC. Again, reference compounds and information on these in the laboratory by these techniques is essential if the technique is to be used in doping control.

If large amounts of drugs are present in the urine, then there is a possibility of using micro-infrared spectroscopy in GLC.

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List of Doping Substances

The IOC Medical Commission approved the following list of doping substances at its meeting in Munich on 19th May, 1971.

a) Psychomotor stimulant drugs, e.g.
amphetamine
benzphetamine
cocaine
diethylpropion
dimethylamphetamine
ethylamphetamine
fencamfamin
methylamphetamine
methylphenidate
norpseudoephedrine
phendimetrazine
phenmetrazine
prolintane
and related compounds

b) Sympathomimetic amines, e.g.
ephedrine
methylephedrine
methoxyphenamine
and related compounds

c) Miscellaneous central nervous system stimulants, e.g.
amiphenazole
bemigride
leptazol
nikethamide
strychnine
and related compounds

d) Narcotic Analgesics, e.g.
heroine
morphine
methadone
dextromoramide
dipipanone
pethidine
and related compounds

This list is not complete.
Other substances may still be added.

Control procedure applied in the Games of the XXth Olympiad Munich 1972 and the XIth Winter Olympic Games Sapporo 1972.

1 Selection of Athletes

1.1

A proportional number of doping controls shall be undertaken in all sports.

1.2

The number of athletes to be checked per day in each sport shall be agreed upon by the IOC Medical Commission, the International Federation concerned and the Organizing Committee, with due consideration of the available laboratory capacity.

1.3

The International Federation concerned shall determine the number of athletes in the various events of its sport to undergo a control, in accordance with the total number agreed upon under section 1.2.

1.4

The International Federation concerned shall likewise determine the criteria for selecting the individual athletes to be checked.

1.5

If doping is suspected, the IOC Medical Commission shall have the right to demand that additional athletes be checked.

2 Sample-taking Procedure

2.1

Immediately after the contest or after determination of the final position, the competitor selected for a doping check shall be handed a green card by a representative of the Organizing Committee and asked to report within one hour with his identity card to the waiting room of the doping control station designated on the green card.

The green card shall bear the competitor's starting number and the statement that the competitor may be accompanied by an attendant (team official, coach or doctor) when reporting to give a sample; moreover, it shall point out the possible consequences if an athlete should fail to report for the control within the given time limit (cf. section 4). Part of the card shall be a detachable stub which shall also bear the competitor's starting number, and shall confirm that the competitor has taken note of the representative's request.

2.2

When the representative has entered the time on the main part of the card and on the detachable stub, the competitor shall sign the notice of confirmation on the stub.

2.3

The representative shall immediately pass the stub to the official in charge of the doping control station concerned.

2.4

Should the competitor fail to report to the doping control station within the time limit set in section 2.1, the fact shall be noted in the records. The records shall be signed by the official in charge of the station and shall be delivered immediately through the Director of Doping Control to the Chairman of the IOC Medical Commission, who shall decide on the further procedure to be taken.

2.5

Upon arrival at the doping control station the competitor and the accompanying person shall be attended in the waiting room by a representative of the Organizing Committee.

2.6

The representative shall check the identity of the competitor by means of the identity card and starting number.

2.7

Only one competitor at a time shall be called into the doctor's office to provide a sample.

2.8

In addition to the competitor and the accompanying person, only the following persons may be present in the doctor's office:
the doctor in charge of the station,
a female medical technician, whose duties include keeping the records,
a representative of the international federation concerned,
a member of the IOC Medical Commission,
the Director of Doping Control,
the official in charge of taking samples,
an interpreter.

2.9

The time and the personal data of the competitor shall be noted in the records.

2.10
The competitor shall select two flasks from a number approved by the IOC Medical Commission. Each pair of flasks shall bear the same code number (with the letters A or B).

2.11
He shall fill one of the flasks with his urine (minimum 50 ml.) under the supervision of the doctor (or, in the case of female competitors, of the female medical technician).

2.12
If the competitor refuses to give a sample of urine, the possible consequences shall be pointed out to him (cf. section 4). If he still refuses, this fact shall be noted in the records. These shall be signed by the doctor, the medical technician, the competitor, and, if any, the accompanying person and the representative of the federation, and shall be sent immediately through the Director of Doping Control to the Chairman of the IOC Medical Commission.

2.13
If the competitor is unable to give a urine sample after a fair period of time, this fact shall be noted in the records. The Chairman of the IOC Medical Commission shall decide on the further procedure to be taken.

2.14
Immediately after taking the sample, the doctor shall test the pH-value of the urine. The result of this test shall be noted in the records.

2.15
The doctor shall then pour half of the urine into the second flask and shall seal both flasks.

2.16
The doctor shall give the competitor and the accompanying person an opportunity to make sure that the flasks are correctly sealed.

2.17
The code number shall be noted in the records by the doctor. The medical technician shall give the competitor and the accompanying person an opportunity to ascertain that the number noted in the records agrees with that engraved on the two flasks.

2.18
The competitor shall certify by signing the records that there have been no irregularities in the entire sample-taking procedure. The records shall also be signed by the doctor and the accompanying person (if any), and shall then be placed in an envelope which shall be sealed.

2.19
The envelope containing the records shall be sent through the Director of Doping Control to the Chairman of the IOC Medical Commission.

2.20
The medical technician shall place the two sealed flasks in a container which can be locked and sealed.

2.21
The container shall be sealed by the medical technician before being transported to the laboratory.

2.22
The doctor shall give the container to the courier against receipt.

2.23
The courier shall take the container to the laboratory without delay.

2.24
A person appointed by the head of the laboratory shall acknowledge receipt of the sealed container in writing.

3 Sample Analysis

3.1
The analysis of a sample shall be completed, if possible, within 24 hours of its arrival in the laboratory.

3.2
The analysis shall involve the following stages:

3.2.1 Screening:
Thin layer chromatography to identify non-volatile substances, and gas chromatography to identify volatile substances.

3.2.2 Identification:

3.2.2.1
Gas chromatography using two columns of different polarity and preparation of derivatives prior to gas chromatography, or determination of the Kovats indices. Pyrolysis gas chromatography may also be used.

3.2.2.2
As an alternative to 3.2.2.1: combined chromatography (thin layer or gas) with mass or infrared spectroscopy.

3.2.2.3
The identification of a substance shall ensue through the coincidence of the values determined in the above tests with those of an authentic comparative sample.

3.3
In addition to the head of the laboratory and the laboratory staff, only the following persons shall be admitted to the laboratory:
members of the IOC Medical Commission
persons with special authorization from the Chairman of the IOC Medical Commission
the Director of Doping Control.

3.4
Should the analysis prove positive, the head of the laboratory shall immediately inform the Chairman of the IOC Medical Commission through the Director of Doping Control and provide the analytical details which led to this result within 48 hours.

3.5
The Chairman of the IOC Medical Commission shall then without delay call a meeting to which the responsible doctor or other representative of the delegation in question, a representative of the international federation concerned and the Director of Doping Control shall be invited.

3.6
The head of the delegation to which the competitor concerned belongs may, within 12 hours of receipt of the positive results in writing, file a written request with the Chairman of the IOC Medical Commission that the result be reexamined using the duplicate sample.

3.7
The analysis of the duplicate sample shall be carried out in the same laboratory, but by personnel not involved in the first analysis.
The analysis shall be supervised by a member of the IOC Medical Commission. The delegation in question shall be allowed to send an observer to the laboratory.

3.8
The member of the IOC Medical Commission shall inform the Chairman of the Commission of the result of this analysis. He in turn shall inform the head of the delegation to which the competitor belongs.

3.9
The result of this control analysis shall be final.

4 Sanctions

4.1
Any athlete refusing to undergo doping control or found guilty of doping shall be eliminated from the Olympic Games by the International Federation concerned, following the proposal of the IOC Medical Commission.

4.2.1
If the athlete belongs to a team, the game or competition in question shall be forfeited by that team.

4.2.2
After the explanations of the team have been considered and the case discussed with the international federation concerned, a team in which one or more members have been found guilty of doping may be disqualified from the Olympic Games.

4.2.3
In certain sports, in which a team may no longer compete after a member has been disqualified, the remaining members may compete on an individual basis.

4.3
A medal shall be withdrawn by decision of the IOC Executive Board following the proposal of the IOC Medical Commission.

4.4
The above regulations shall in no way affect further sanctions by the International Federations.

3

47

Figure 1
A
Amphetamine excreted (mg base)
B
Time (hr)

-●-
Cumulative urinary excretion of amphetamine under normal

△
alkalide

-○-
acidic

(–)
Urine conditions after oral administration of 15 mg amphetamine

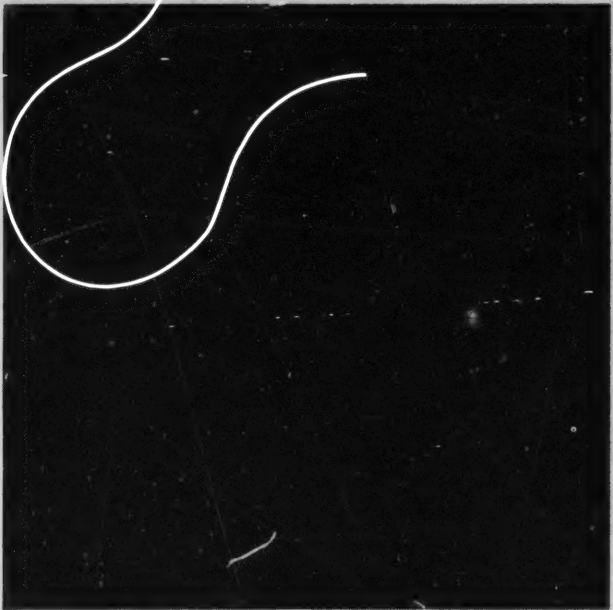


Figure 2
Urinary excretion of ethylamphetamine and urinary pH profile in (H) subjects on their normal low protein diet receiving a dose of drug and (I) the same subjects on their normal diet but with additional protein at breakfast for four days, the amg being given on the fourth day.

A
Urinary PpH

B
Time of urine collection

C
Ethylamphetamine excreted (% dose)

D
Subjects

—•—
E

—•—
F

—•—
G

———
Excretion of Ethylamphetamine

......
Bulked urinary pH

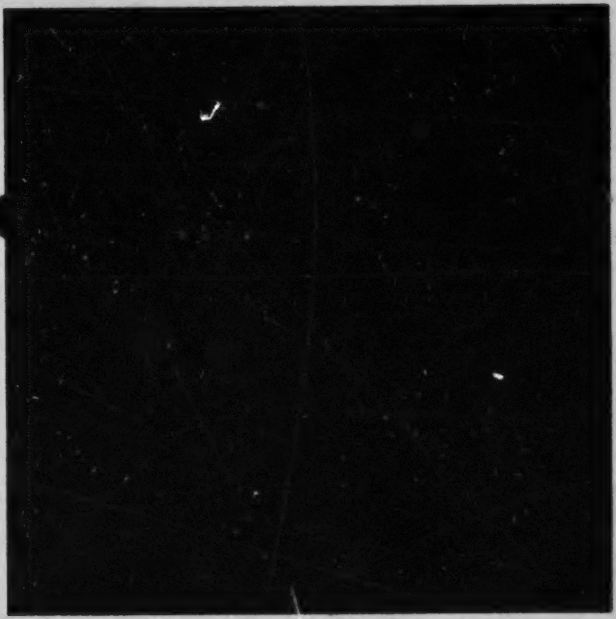


Figure 3
The influence of urinary pH and urin output on the urinary excretion of methylamphetamine (and its metabolite) in men after oral administration of 11. Omg (+) methylamphetamine.
Subject M. R.

--◆--
Urinary pH

——
Methylamphetamine

—◆—
Amphetamine
similar patterns were obtained other subjects
A
Urine output (m/min)
B
Excretion rate (μg base/min)
C
Urinary pH
D
Time (hr)

Figure 4
Urinary excretion of ethylamphetamine and amphetamine over 24 h from subject with no urine pH control, who had taken an oral dose of 20 mg (+) ethylamphetamine HCl.

A
Mean time (h)

B
Urine output (ml/min)

C
Wet rate of excretion (mg/min)

D
Urine pH

—o—
Ethylamphetamine

—•—
Amphetamine

—●—
Urine output (ml/min)

--●--
Urine pH

Figure 5
Reproduction of a chromatogram obtained on analysis of a racing cyclists urine showing the presence of methylamphetamine and its metabolite amphetamine in the urine.

A
Time (min)
B
Detector response (2×10^{-11}
A.F.S.D.)
C
Either + urine constituents
D
N : N – dimethylaniline
(Internal marker)
E
Methylamphetamine
F
Amphetamine

Figure 6
Composite chromatogram of amphetamine and some of its derivatives on column "C".

[illegible]
Time (min)
B
Detector response (10^{-10} A.F.S.D.)
C
Ether & reagent
D
Amphetamine
E
Acetone Schiff's base
F
MEK Schiff's base
G
Methyl iso propyl ketone Schiff's base
H
Isothiocyanate
I
IBMK Schiff's base
J
Cyclopentanone Schiff's base
K
Cyclohexanone Schiff's base
L
Cycloheptanone Schiff's base

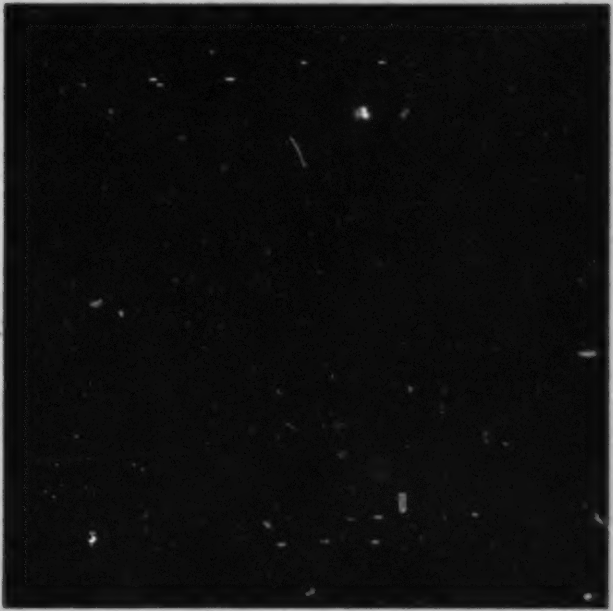
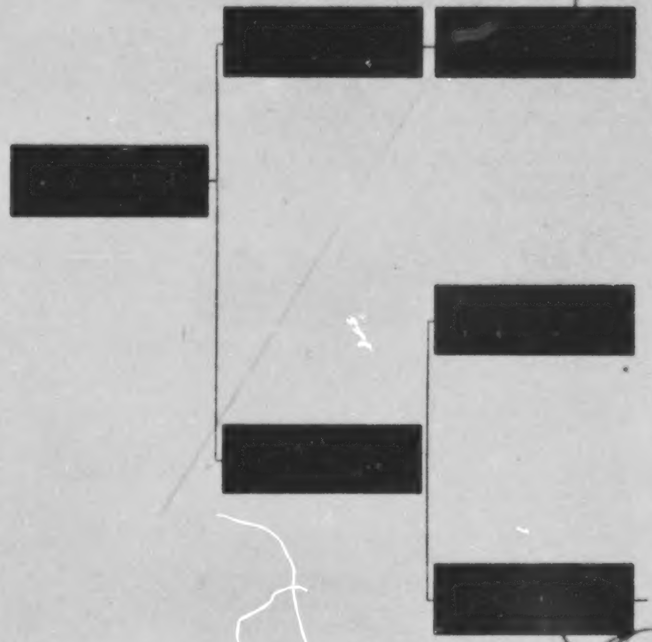
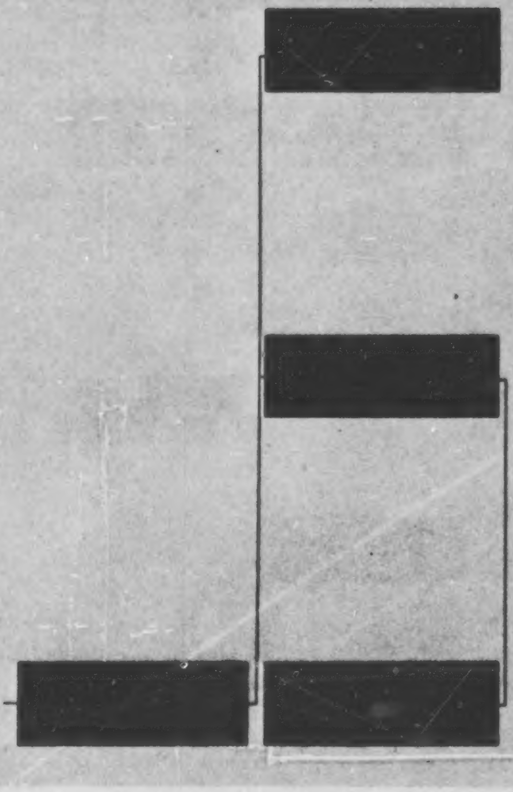


Figure 7
Scheme Urine
Analysis

Stage 1
Screening





Stage 2
Identification A

Stage 2
Identification B
More complex
techniques
e.g. Pyrolysis GLC
Mass spectroscopy
after GLC
Micro infra red
spectroscopy after
GLC

Table I
Columns are conditioned at their operating temperatures for 24 hr before use and silanized with hexamethyldisilazane.

System	Tubing	Liquid phase	Solid support	Oven temp. (°C)	N_2	H_2 (lb. in $^{-2}$)	Air
A	3 m ss $^{1}/_{8}$ in. o.d.	5% Carbowax 6000 5% KOH	Chromosorb G A/W DMCS treated 80–100 mesh	155	20	20	25
B	1 m ss $^{1}/_{8}$ in. o.d.	2% Carbowax 20M 5% KOH	Chromosorb G A/W DMCS treated 80–100 mesh	140 & 180	15	15	25
C	2 m glass ¼ in. o.d.	2·5% SE-30	Chromosorb G A/W DMCS treated 80–100 mesh	120 & 160	20	24	30
D	2 m ss $^{1}/_{8}$ in. o.d.	10% Apiezon L 10% KOH	Chromosorb G A/W DMCS treated 80–100 mesh	155	20	20	25

Table II
GLC and urinary excretion data for some stimulants and related compounds

Compound	Formula No.	Retention time (min) System** A 155°	B 140°	C 120°
2-Aminoheptane	1	2·2	—	0·9
Methylamino-methylheptane	2	2·4	—	1·4
Isometheptan	3	3·1	—	1·8
Cyclopentamine	4	3·9	—	1·8
Isopropylhexedrine	5	5·2	—	2·9
Propylhexedrine	6	5·2	—	2·9
Fenfluramine	7	8·6	—	3·9
Norfenfluramine	8	10·0	—	2·6
Methylamphetamine*	9	10·8	—	3·4
Dimethyl-amphetamine*	10	10·8	—	4·2
N-Ethyl-amphetamine*	11	11·0	—	4·4
Phentermine	12	11·2	—	2·8
Amphetamine*	13	11·4	—	2·4
Mephentermine	14	13·4	—	4·3
Pargyline	15	18·4	1·4	3·6
Aletamine	16	26·2	1·9	5·2
Tranylcypromine	17	28·6	2·0	3·8
Nicotine	18	29·4	2·1	7·1
Methoxyphenamine	19	31·7	2·4	7·7
Chlorphentermine	20	32·6	2·4	6·6
Modaline†	21	42·4	3·1	10·2
Cypenamine†	22	42·4	3·1	7·6

*
Stimulant drugs most likely to be used as doping agents.

†
Examples of newer drugs with central stimulant actions. Compounds listed also include other amphetamine analogues mainly used for their vascular and bronchial effects or as anoretics, reputedly with much less or no central stimulant action. Pargyline, tranylcypromine and phenoxypropazine are listed as examples of the monoamine oxidase inhibitor type of stimulant.

S
secondary amine.

T
tertiary amine.

ND
not determined.

NT
not taken by volunteer(s).

**
Determined with reference to amphetamine (system A) and to ephedrine (systems B and C).

§
Determined with reference to the amphetamine acetone derivative (system A); the ephedrine acetone derivative (system B, 140° and system C, 120°) and the acyl-amphetamine derivatives (system B, 180° and system C, 180°).

◆ ◆
N
norfenfluramine;
A
amphetamine;
MA
methylamphetamine;
P
phentermine;
D
de-ethylated analogue(s);
PH
phenmetrazine;
E
ephedrine;
NE
norephedrine;
NP
norpseudoephedrine;
DM
demethylated analogue of ethylephedrine;
BA
benzylamphetamine.

	Excretion in urine		Derivative retention time (min) System§						
D 155°	Unchanged	Metabolite(s) ++	A 155° Acetone	B 140° Acetone	B 180° *N*-Acetyl	B 180° *N*-Propionyl	C 120° *N*-Acetyl	C 160° Acetone	C 160° *N*-Propionyl
ND	NT		2·8	—	0·75	0·75	1·7	1·7	2·1
ND	NT		S	S	0·75	0·75	S	2·8	3·5
ND	NT		S	S	1·0	1·0	S	3·2	3·9
4·6	NT		S	S	1·3	1·3	S	4·0	5·0
8·2	NT		S	S	1·7	1·7	S	5·6	7·1
ND	NT		S	S	1·7	1·7	S	5·6	7·1
ND	Yes	N	S	S	2·1	2·1	S	5·5	6·9
ND	Yes		9·0	—	3·2	3·3	4·3	3·7	4·4
8·2	Yes	A	S	S	3·1	3·2	S	5·6	6·9
ND	Yes	MA+A	T	T	T	T	T	T	T
10·2	Yes	A	S	S	3·0	3·0	S	6·4	8·2
7·5	Yes		Not formed	Not formed	2·8	2·8	Not formed	3·8	5·3
6·1	Yes		12·5	—	4·0	4·1	4·7	4·0	4·9
ND	Yes		S	S	2·5	2·6	S	5·6	7·6
9·1	Yes		T	T	T	T	T	T	T
ND	NT		21·8	1·6	5·6	5·6	8·8	7·0	8·8
ND	NT		43·0	3·4	15·6	16·2	9·5	7·6	9·6
17·7	Yes		T	T	T	T	T	T	T
ND	NT		S	S	7·0	7·1	S	11·4	13·6
21·7	Yes		Not formed	Not formed	7·4	7·4	Not formed	8·1	11·0
ND	NT		T	T	T	T	T	T	T
ND	NT		56·3	3·3	13·5	12·7	15·4	11·1	14·0

Table II

Compound	Formula no.	Retention time (min) System**		
		A 155°	B 140°	C 120°
Diethylpropion*	23	—	3·6	13·6
Phendimetrazine*	24	—	3·6	11·6
Prolintane	25	—	3·7	29·2
Methylephedrine*	26	—	4·7	9·5
Phenmetrazine*	27	—	5·7	10·5
Ephedrine*	28	—	6·3	8·4
Pseudoephedrine	28	—	6·3	8·4
Ethylephedrine*	29	—	6·5	13·0
Fencamfamin	30	—	6·7	31·3
Norpseudoephedrine	31	—	8·4	6·9
Norephedrine	31	—	8·6	6·9
Encyprate†	32	—	9·5	26·5
Furfurylamphetamine	33	—	10·2	26·0
Furfurylmethyl-amphetamine	34	—	10·2	35·0
Phenoxypropazine	35	—	10·1	12·4
Nikethamide*	36	—	17·6	16·0
Benzphetamine	37	—	19·0	74·0
Methylphenidate*	38	—	20·9	46·4
Pyrovalerone†	39	—	21·6	87·0
Leptazol*	40	—	52·0	15·8

*
Stimulant drugs most likely to be used as doping agents.
†
Examples of newer drugs with central stimulant actions. Compounds listed also include other amphetamine analogues mainly used for their vascular and bronchial effects or as anorexics, reputedly with much less or no central stimulant action. Pargyline, tranylcypromine and phenoxypropazine are listed as examples of the monoamine oxidase inhibitor type of stimulant.
S
secondary amine.
T
tertiary amine.
ND
not determined.
NT
not taken by volunteer(s).
**
Determined with reference to amphetamine (system A) and to ephedrine (systems B and C).
§
Determined with reference to the amphetamine acetone derivative (system A); the ephedrine acetone derivative (system B, 140° and system C, 120°) and the acyl-amphetamine derivatives (system B, 180° and system C, 180°).
‡‡
N
norfenfluramine;
A
amphetamine;
MA
methylamphetamine;
P
phentermine;
D
de-ethylated analogue(s);
PH
phenmetrazine;
E
ephedrine;
NE
norephedrine;
NP
norpseudoephedrine;
DM
demethylated analogue of ethylephedrine;
BA
benzylamphetamine.

	Excretion in urine		Derivative retention time (min) System§						
D 155°	Unchanged	Metabolite(s) ++	A 155° Acetone	B 140° Acetone	B 180° *N*-Acetyl	B 180° *N*-Propionyl	C 120° Acetone	C 160° *N*-Acetyl	C 160° *N*-Propionyl
43·0	Yes	D	T	T	T	T	T	T	T
35·7	Yes	PH	T	T	T	T	T	T	T
ND	NT		T	T	T	T	T	T	T
25·2	Yes	E + NE	T	T	T	T	T	T	T
31·3	Yes		S	S	11·2	11·5	S	12·6	16·3
19·4	Yes	NE	—	2·7	17·8	19·2	11·6	9·9	13·1
ND	Yes	NP	—	2·5	16·0	16·0	10·4	10·0	13·1
ND	Yes	E + NE + DM	T	T	T	T	T	T	T
ND	NT		S	S	16·8	16·8	S	37·4	47·0
ND	Yes		—	3·0	29·5	30·8	7·8	8·3	10·7
16·1	Yes		—	2·8	28·6	30·0	8·8	8·6	10·5
ND	NT		T	T	T	T	T	T	T
ND	NT		S	S	16·8	17·2	S	24·0	28·7
ND	Not detected	M + A	T	T	T	T	T	T	T
ND	NT		—	7·4	13·0	13·8	15·5	13·0	14·6
33·7	NT		T	T	T	T	T	T	T
ND	Yes small amounts	BA + MA + A	T	T	T	T	T	T	T
ND	Yes		S	S	31·0	32·0	S	40·0	49·6
ND	NT		T	T	T	T	T	T	T
ND	NT		T	T	T	T	T	T	T

Table III
TLC of some stimulant drugs and related compounds

Support		Solvent v/v
Alumina	1	$CHCl_3$–MeOH (50:50)[1]
Silica Gel	2	$CHCl_3$–MeOH (50:50)[2]
Silica Gel	3	$CHCl_3$–diethylamine (9:1)[3]
Silica Gel	4	$CHCl_3$–acetone–diethylamine (5:4:1)[3]
Silica Gel	5	n-butanol–acetic acid–water (5:4:1)[4]
Silica Gel	6	MeOH–acetone (50:50)[5]
Silica Gel	7	MeOH–acetone–NH_3 (35%) (47·5:47·5:5)[5]
Silica Gel	8	MeOH–acetone–triethanolamine (1:1:0·03)[6]
Silica Gel	9	Isopropanol–NH_3 (5%) (10:1)[7]
Silica Gel	10	Dimethylformamide/ethylacetate/+3 drops n-octanol (1:9)[8]

[1] Noirfalise, 1966; [2] Noirfalise, 1965, 1966; [3] Waldi, 1964; [4] Debackere & Massart-Leen, 1965; [5] Moerman, 1964; [6] Baumler & others, 1964; [7] Ristic & Thomas, 1962; [8] Eberhardt & Debackere, 1965.

A, amphetamine; MA, methylamphetamine; pOHA, p-hydroxyamphetamine; E, ephedrine; ME, methylephedrine; NE, norephedrine; P, phenmetrazine; D, diethylpropion; N, nikethamide; S, strychnine; C, caffeine; Nic, nicotine.

Drug Solutions.
Ethereal solutions of the basic forms of each reference compound were prepared by extraction of alkaline solutions of the salts. Approximately 20–30 µg of each drug was applied to thin-layer plates using a 10 µl Hamilton syringe. A standard solution of (+)-amphetamine sulphate in methanol was used for the determination of spray sensitivities.

Preparation of Plates.
Alumina G (Merck) or Silica Gel G (Merck) (30 g) was mixed with water (60 ml), containing sodium fluorescein (0·04%), by stirring for 2 min in a mortar and spread on to 20×20 cm glass plates in a layer 0·25 mm thick. The plates were allowed to dry in the air for 15 min and then

Rf values x 10^2

A	MA	pOHA	E	ME	NE	P	D	N	S	C	Nic
57	81	37	69	84	13	89	92	87	93	93	91
29	20	16	23	30	19	52	81	89	21	88	72
74	79	25	35	64	23	67	97	89	70	79	84
84	70	46	33	69	83	60	92	82	61	71	81
60	49	57	50	41	55	51	37	56	15	57	22
59	24	51	30	36	67	45	79	75	12	74	56
85	56	81	78	67	92	77	97	87	49	85	79
63	27	49	28	42	71	53	79	80	14	76	63
46	32	40	29	39	44	51	82	70	24	57	65
21	16	9	20	38	18	26	75	67	9	68	59

for 2 hr in an oven at 80°, after which they were placed in a desiccator to cool before use. Plates were run at ambient room temperature.

Detection of Spots.
Initially spots were located using ultraviolet light (254 and 360 mμ). All the reference compounds could be visualized in this way. The following spray reagents were used:

(a)
Iodoplatinate reagent: 3 ml 10% solution of chloroplatinic acid treated with 97 ml water and 100 ml aqueous 6% KI solution added. Stored in a brown glass bottle. Reference compounds appeared as pale yellow or brown spots except strychnine which showed as a distinctive deep violet spot and *p*-hydroxyamphetamine and caffeine which were not detected. Sensitivity (amphetamine) about 5 μg.

(b)
i. Freshly diazotized *p*-nitroaniline (Wickstrøm & Salvesen, 1952). ii. 0·5 n NaOH in ethanol. Reference compounds appeared as yellowish spots except amphetamine which showed as a distinctive pink spot and *p*-hydroxyamphetamine which gave a brown spot. Strychnine, nicotine and caffeine were not detected. Sensitivity (amphetamine)—about 5 μg.

(c)
Ninhydrin reagent (Dole & others, 1966): 0·4% ninhydrin in acetone prepared within 30 min of use. After warming under the ultraviolet lamp the reference compounds appeared as pale blue spots except amphetamine, ephedrine and norephedrine which showed as distinctive violet spots. Caffeine and strychnine were not detected. Sensitivity (amphetamine) about 1 μg.

Note:
plates without added fluoroscein were used to determine the above spot colours.

Table IV
GLC Data for some Amphetamine Derivatives (Retention times in min)

System	Oven temp. (°C)	Free amphetamine	Reagent A	MEK	MIK	MPK	IMK	CP	CHX	CHT	BMK	AA	HFB	CS
A	155	11·4	12·3	14·6	14·9	19·6	21·9	47·9	68·9	—	—	—	—	24·9
B	140	0·85	0·95	1·1	1·2	1·5	1·8	3·6	5·0	8·2	26·0	24·1	1·9	6·1
C	120	2·4	4·3	6·5	8·2	9·8	12·9	16·8	21·5	44·6	—	—	6·3	11·2

A	acetone;
MEK	methyl ethyl ketone;
MIK	methyl isopropyl ketone;
MPK	methyl n-propyl ketone;
IMK	isobutyl methyl ketone;
CP	cyclopentanone;
CHX	cyclohexanone;
CHT	cycloheptanone;
BMK	benzyl methyl ketone;
AA	acetyl acetone;
HFB	heptafluorobutyric anhydride;
CS	carbon disulphide

Comité Organisateur des
XIe Jeux Olympiques d'hiver
Sapporo 1972
Commission du contrôle de dopage

Organizing Committee for the
XIth Olympic Winter Games
Sapporo 1972
Doping-control Commission

Président Chairman	Prof. Yoshio Kuroda
Membres Members	Dr. Takeshi Kitsutaka Shoichi Honma Dr. Hiroyasu Kanashima

Comité Organisateur des Jeux de la
XXe Olympiade Munich 1972
Commission du contrôle de dopage

Organizing Committee for the Games
of the XXth Olympiad Munich 1972
Doping-control Commission

Président Chairman	Prof. Gottfried Schönholzer
Membres Members	Dr. Manfred Donike Dr.Wolfgang Hegels Dr. Erich Hein Dr. Kurt Käfer Dr. Armin Klümper Ernst Knoesel Claus Willing

Dr. Hanley. Largely, it was in cycling and in some soccer, the first death was in 1886, a British cyclist that took a whole lot of ether which was the new and volatile and the unusual substance of that day.

You asked about attempts to control doping. Earlier attempts to control the practice of doping in sports involved the inspection of luggage and the inspection of food, these were a failure. They put in some new rules and regulations, and these were failures. But in 1910, a Russian chemist devised a method of testing saliva in horses for alkaloids. Things were about the same in those days also because he wouldn't give the method out. Sigmund Frankel in Austria devised another method. In 1935 the Florida Horseracing Commission estimated that between 30 and 50 percent of the horses were doped. In 1969 the same source indicated that less than 1 percent was doped. I think this was fairly good proof that doping control works, at least with horses.

With human athletes——

Senator Mathias. Mr. Chairman, if I could interrupt at that point, because you raised a question which is of some interest which I have had some experience in. I was the Assistant Attorney General of Maryland and one of my official clients was the Maryland State Racing Commission. One of my duties was the prosecutor of stimulation cases and I would agree with you there are control steps that are effective, they depend upon foolproof testing.

Dr. Hanley. Yes, they do.

Senator Mathias. Absolutely foolproof testing.

Dr. Hanley. Yes.

Senator Mathias. I would like to broaden the scope of the hearing for a second if I may, we know that stimulation in horses is not only the result of the administration of drugs, there are psychiatric stimuli that can be administered which are also always very injurious and I want to raise briefly whether you have observed any of this?

Dr. Hanley. Hypnosis?

Senator Mathias. No. I am talking of course about horses, you have a slightly different kind of approach to it, for instance, chainings, are you familiar with chaining of horses?

Dr. Hanley. No, sir.

Senator Mathias. What you do is take the horse and tie him up in the stable and you beat him with a chain and then all you have to do for a race to get that horse really psyched up is rattle that chain. You don't have to beat him because that would leave welts or other marks and you could see that and you could just go into a stall and rattle a chain and the adrenalin flows and that horse is psyched up by the time he gets to the track. Is there by analogy any kind of practice of that sort that you know of?

Dr. Hanley. Sir, I have never heard of any.

Senator Mathias. Any kind of psyching up?

Dr. Hanley. Aside from the so-called coaches' half-time speech, I haven't observed any of this.

Senator Mathias. No sort of psychological impact that you would feel is material?

Dr. **Hanley.** I think the whole structure and design of competition is one to stimulate psychologically the man's desire for competition.

Senator **Mathias.** And that is leadership, that is something we need as a Nation, something we need individually, I am not talking about leadership which psychs you up in a positive healthy manner, I am talking about psychic.

Dr. **Hanley.** No, sir, I don't know of any.

Senator **Mathias.** I am very happy to hear that.

Senator **Bayh.** The nearest thing to this chaining episode, but really it is not the same thing, I suppose is the kind of pressure that might be on a young athlete not to lose scholarship and the pressure that might be applied to compete either by insinuation or by direct threat. Have you run into any of these?

Senator **Mathias.** I think the Chairman has been very perceptive on the kinds of sick psyching, it is a wide spectrum obviously, as I said initially. The chaining thing. But it gets to the same end as if I—the psychological pressures you create, you create conditions which instead of making athletics a desirable and a normal and praiseworthy and desirable activity, it becomes sick.

Dr. **Hanley.** Instead of being pleasurable, it becomes a job. I am sure this occurs. It must be very difficult for at least professional athletes who have to get themselves up to the spot to perform over and over on those long schedules.

Senator **Bayh.** Please proceed.

Dr. **Hanley.** With human athletes with a well-run dope program I believe we could decrease the amount of doping and with a sensible educational program go a long way toward eliminating the problem entirely.

The education components have to include some strong words about the experiments, that test six athletes with steroids with special diets and weight training programs and then send out 10,000 reprints around the country. It also has to include some strong words I believe about the compiling of a series of horror tales from a newspapers and making speeches out of this.

The negative side of the doping scene which is largely gone now was with us for a while. The great example of this is Jim Jeffries after he was kayoed by Jack Johnson and it was stated that someone had doped his tea. This has now become, a not very believable reason for a lot of losers in athletics.

Senator **Bayh.** I think what we're concerned about is not doping to lose, but doping to win.

Dr. **Hanley.** Yes.

Senator **Bayh.** That is different.

Dr. **Hanley.** That is the negative side of the picture. The current policy on doping is variable. Almost no standardized policy in the United States, most international events do have some dope control programs, some nations, France, Italy and Australia have Federal laws prohibiting doping and I believe a copy of that is in that folder. Most federations are following the IOC guidelines. The booklet which you have The Olympic programs, both summer and winter, have strict dope control programs. The key ingredient, I think that is the experience of the personnel. You have to have experienced personnel in every phase of the program in the selection of those to be tested, collection, laboratory and the administration. At the moment urine is the biological fluid of choice, the laboratory analysis by gas liquid chromatology and mass spectroscopy to identify the metabolites of the doping substances used, and the doping substances used are legion. We even had a request to approve "ground up reindeer horns" from one group in 1972.

The laboratory must have experience in detecting small quantities and this is a very important point in any dope control program which I would like to stress. Any laboratory can turn in a negative result, and this can be a real problem. Most laboratories, most hospital laboratories are geared to finding massive overdoses, not the 5 and 10 milligrams doses of amphetamines. It takes a very good laboratory to pick these up.

In your follow up section appended to my statement which you have, you can see that, what one takes, affects the rate of excretion of amphetamines and if one wants to, one can conceal the amphetamines rather easily unless the lab is aware of this. They may fall short of their goal. If one tests only 3 out of 10 in any event he is taking 7 chances of missing what he is looking for.

Senator **Bayh**. You think that random spot tests is not the way to do it? You think that they should be conducted across the board?

Dr. **Hanley**. Sir, I think it depends on what you are trying to find out. If you are trying to find out the incidence of doping in that sport on that day you have to test everybody.

If you are trying to discourage doping in general, testing of everybody is so expensive and so time consuming that random spot checking will slow down the rate a great deal.

Senator **Bayh**. I am sorry, I am under this crazy time pressure we have this information that you have in your statement, could I ask you to direct yourself to several questions.

One area that I think is important involves the kind of tests and the problems that the NFL Players' Association has raised. In looking at what tests and experience in Munich and elsewhere, do you believe that the spot testing is a sufficient deterrent or would we have to test everybody? What are you recommending?

Dr. **Hanley**. If in this case, where you're trying to diminish the amount of doping and you're not trying to find out factually what the actual extent is, the best thing to do is to spot check, not letting anybody know, until the actual event is in progress, what is going to be checked or how many are going to be checked. If you show up at the last minute at each stadium that has a dope control room, your dope control officers show up at the last minute, then they announce who they are going to check and when. You will decrease doping over a period of time.

But you won't know how much if you don't know what it was to start with.

Senator **Bayh**. That really isn't an equitable way to approach it, is it?

Dr. **Hanley**. No; it isn't.

Senator BAYH. Would the fellow who may have taken the amphetamines, they might be on the list, and the second man who takes the dope be——

Dr. HANLEY. Yes; if you're talking about team sports, someone who was in the game for 30 seconds and fell down when he was in there and did nothing and he is the one who had taken the dope, the team would be disqualified.

Senator BAYH. What do you recommend as far as national policy is concerned?

Dr. HANLEY. I recommend as we did earlier, all national championships for example, in track and field in amateur sports, that they all be tested.

Senator BAYH. Should we limit our concern to amateur athletics?

Dr. HANLEY. No, sir, but here is one area where I have been involved and this is the area I would logically turn to. I think if you want to do a broad dope control program you will have to go into professional sports too.

Senator BAYH. Well, I have not proposed any particular approach. I am trying to respond to a problem. I have had little or no experience with this problem. You and others who come before us, have to give us the benefit of your expertise so we will know what responsible action to take.

Dr. HANLEY. My recommendation is that national championships, and I think you will find that they are planning to do this. they will do a series of tests, everyone will be involved, these tests will be monitored correctly, done correctly, and for the first time you will find out the incidence of doping in that particular sport.

Senator BAYH. Could I ask my staff counsel to direct a couple of questions. There is a vote going on and I am going to have to slip out. I want to come back and start the testimony of NAIA.

Doctor, I appreciate your contribution here and I hope we can continue to consult with you.

I hope this is a continued search for the truth. I have to believe that all who come before our committee are seeking the truth. Often it is like the blind man who is asked to describe the elephant, we have to figure out what part of the elephant you feel. I think everybody is trying to do their best to search out the truth. You by your own admission state that we really don't have the facts.

Dr. HANLEY. We really don't know them.

Senator BAYH. Mr. Scott makes another assessment, I don't know of any way to dispute wrong motives.

Dr. HANLEY. No, sir, as Mr. Mathias said, that is what makes a horse race.

Senator BAYH. Could we get a couple more questions? I am going to have to go and vote. I will be right back.

Mr. RECTOR. One area that we were interested in exploring was that extent to which any disciplinary action has been taken by the IOC against physicians, trainers, or others who dispense amphetamines, steroids, or other drugs that were banned by the guidelines?

Dr. HANLEY. The answer is none. It is a fairly complicated problem. Where do the drugs come from, who gets them and why are these used or involved?

The IOC Medical Commission is a series of eight men representatives from various nations who set up and administer the dope council control program. They really have no investigative staff, they realy can't find out where the drugs came from, this is beyond the scope of their charge.

Mr. RECTOR. One of the things we have been running across with regard to prescriptions for dangerous drugs—I am sure that it applies to these circumstances as well—is that, while the Food and Drug Administration indicates that steroids are not properly indicated for inducing or enhancing athletic performance, the private physician still has the discretion to write a prescription for an athlete giving an excessive dosage on a long-term basis. What would be the position of the Olympic Committee with regard to a doctor who writes prescriptions contrary to the FDA indications?

Dr. HANLEY. He would be condemned and should be. The AMA itself has put out recommendations that this not be done and I think in general from the work of this committee, the cutback in production of amphetamines and the intended scientific publications that went along with this have decreased the prescription-writing habits of many physicians.

Mr. RECTOR. I know that is true with regard to the amphetamines, I was curious as to whether there was a similar decline in prescriptions for anabolic steroids.

Dr. HANLEY. I personally, yes, I think that they have no place in sports.

Mr. RECTOR. In reviewing the literature last week I noticed a comment in one of your articles, or perhaps someone was quoting your article, and allegedly you made reference to letters you had received from high school and college athletes. Athletes had inquired of you seeking advice under circumstances where coaches were trying to persuade the athletes to take a certain kind of pill. I wonder if you could elaborate on one or two of those examples.

Dr. HANLEY. Without using names, if it is all right. We have received several letters on this subject from concerned parents and some telephone calls from concerned parents about athletes who have been asked to purchase pills from their coaches or managers or teams for the purpose of allaying fatigue which is usually the commonest one, there are several drugs called snap back and stand back which are largely caffeins.

Mr. RECTOR. Over the counter drugs or prescriptions drugs?

Dr. HANLEY. Over the counter drugs are available to anyone who wants to use them. These are sold to the high school athletes unfortunately in large quantities.

Mr. RECTOR. I just wanted to clarify whether your comments where with respect to RX drugs or over the counter drugs.

Dr. HANLEY. Over the counter drugs.

Mr. RECTOR. You made reference to shoddy studies and psuedo scientific literature and individuals who profit from these steroids and amphetamines. I gather from your statement that you think they are solely profiteers. Would you elaborate on the precise kinds of activities to which you refer.

Dr. HANLEY. I think you will find individuals who recommend the use of steroids by saying that everyone uses them so you ought to use them. This is the old cliche that is being used or has been used since time began.

Mr. RECTOR. I think it specifically made reference to distribution of 10,000 or tens of thousands of pieces of literature. Is this part of some kind of advertising campaign?

Dr. HANLEY. No; on this, individuals who are doing research have to justify their existence so they get in one particular one, half a dozen weight lifters and a half a dozen—eight swimmers, I believe it was in this particular one, this particular study in which they put them on high protein diets, vigorous weight training programs and steroids. Following this program, the swimmers didn't do very well, so they dropped them. The weight man showed some increased strength of their grip, after they had been training with the handgrip reprints of this type of experiment one sent all over the country to every physician whose name they could get ahold of. This sort of thing has to be brought out, that all research is not sacrosanct, some of it is pretty poorly done. There is one amphetamine study that gave a big impetus to the amphetamines usage in sports, and that was done at a major university. It starts off by saying that they did six separate experiments and actually if you read it carefully they did one experiment six times and did it worse each time. This study concludes that some people's performance is improved 0.4 percent, 0.5 percent and up to 4 percent improvement with amphetamines. If you look at the study the 0.4 and 0.5 percent improvements were lower than the variations of day to day normal for those individuals. These studies were done on short sprints of swimming where the timing was controlled by electronic guns. If you get the 4 percent improvement this was done on the weight people in track and field where the observer stood 20 feet from where he expected the ball to land and he estimated the distance, the man who threw it estimated the distance, and then they averaged them. I could probably improve my performance 4 percent if I measured it that way.

Mr. RECTOR. Are you indicating that individuals who were involved in the shoddy research have a profit or vested interest? Are they running clinics? Are they selling steroids?

Dr. HANLEY. Some do, some are I think profit motivated to turn out another research paper to hold on to their status.

Mr. RECTOR. Is the profit related to the research paper or perhaps the institution, or what. To the private advertising of steroids?

Dr. HANLEY. The profit ones I think ought to be looked into is the group that sells athletic equipment and high protein supplements and programs for athletes and run training programs for them.

Mr. RECTOR. We would be very much appreciative of any supplemental information which you could provide to point us in the right direction.

Dr. HANLEY. I would be very happy to provide you with any information that you so desire, off the record.

Mr. Rector. One last question, you mentioned one study in which a number of deaths were attributed to drugs.

Dr. Hanley. Dirix, Dr. Dirix—Belgium.

Mr. Rector. In looking at the sports literature of the last 20 years a number of references are made to the athletes' sudden death syndrome, which is a rather mysterious happening. Recently a young man in Colorado was preparing for the Fall football season and suddenly died. I know the Senator was interested in these cases, and it occurred to us that perhaps some of these cases involved the abuse of amphetamines. Some of these athletes had respiratory arrests and other kinds of complications that could be attributed to drugs. What is this sudden death syndrome?

Dr. Hanley. Precisely we don't know. It is probably due to a ventricular cardiac irregularity, which makes the heart an inefficient organ and athletes collapse, the heart doesn't produce enough output of blood to sustain life and he dies. This occurs not only in athletes though.

Mr. Rector. Isn't it true that the same kind of malfunctioning of the body systems is associated with excessive dosages of amphetamines, particularly when you're under a very stressful situation?

Dr. Hanley. It could be.

Mr. Rector. Research conducted in Los Angeles, at the L.A. County—USC Medical Center, has indicated that youngsters, in particular, who were using amphetamines for a substantial period of time and on regular excessive dosages, had developed aneurysms and other related kinds of problems. This is why we're asking the questions about the sudden death syndrome. I think skeptics have questioned whether in fact a number of these—seemingly mysterious, are, in fact, drug deaths.

Dr. Hanley. This is all possible. I think we have to keep in mind that one of the commonest causes of the sudden death in a previously healthy young man is an aneurysm.

Mr. Rector. I would like to thank you. The Senator will be back shortly and we will continue with the next witness.

[Dr. Hanley's prepared statement is as follows:]

PREPARED STATEMENT OF DANIEL F. HANLEY, M.D.

Mr. Chairman and members of the committee; My name is Daniel F. Hanley. I have been associated with the Medical Section of the U.S. Olympic Teams since 1960, and a member of the Medical Commission of the IOC since 1968, the first year of the "Control of Doping Programs" in the Olympic Games.

I wish to thank the Committee for this invitation to help with its efforts to investigate drugs in athletics.

Your invitation suggested five areas for discussion:

1. ETHICAL CONSIDERATIONS IN THE USE OF AMPHETAMINES AND STEROIDS

The question here is—whose ethics?

There is no place in sports for the use of stimulant drugs or steroids.

Down through the years, there must have been at least a thousand substances that have been "the answer" to improving the performance in sports. The alchemists who searched for the substance (formula) which would transmute all base metal into pure gold, have had their pharmacological counterparts throughout the ages. Today, the number and variety of substances ingested, injected, inhaled, and applied, confirms the fact that we are a medicated society, and the fact that there is no chemical answer to improved performance in sports.

Unfortunately in recent years more and more special diets and substances are being touted for personal profit motives, by some who are in a position to influence athletes, almost every substance backed by a series of shoddy "experiments" or "studies" which fail to stand the test of time. To the best of our knowledge, there is no way to supercharge a normal cell. This statement is not acceptable in the sporting world, but it is nonetheless true—there is no known substance which consistently improves performance in a normal healthy, well trained, well conditioned athlete.

As for amphetamines, there is some evidence to show many humans develop an increased amount of insulin in their blood stream after taking amphetamines and a resultant lowering of blood sugar with a concomitant drop in performance. There is also, of course, the horrible possibility of developing drug dependence and as one popular psychiatrist has put it, "Joining the crowd is the commonest cause of acute psychoses in the young adult." You have heard from Dr. Golding on this subject.

What about steroids? They really hold no magic and they do hold a lot of potential harm. When used in the young athlete, they do tend to hasten the closure of the epiphysis and stunt growth. They do tend to alter sexual development. They do create liver problems, ulcers, personality change, etc.

But what do they do to a normal healthy young adult athlete? Here again, one can find almost anything he wants to in the literature. But there are a few well controlled studies involving a significant number of athletes over a reasonable period of time, and they show an increase in weight, but when this increase in weight has been measured in the light of several body components, the increased weight is largely water. Even without that factor, increased weight does not necessarily equal increased strength, and/or increased performance. As a matter of fact, it may work the other way. Again look at the record. If steroids, really did any good, then performances would be increasing by leaps and bounds. There should be a head long rush of athletes breaking records in sports where these are used, and this has just not happened.

From the early 1880's when the first cases of doping were recorded and the drugs used were ether, nitroglycerine, strychnine and brandy, records have been made by well motivated individuals who sharpened thir ability through hard work and intelligent practice.

2. EXTENT OF USE

During the 1972 Olympic Games in Munich, West Germany, approximately 3,000 dope control tests were done and only 12 positives were recorded. But these figures do not tell the whole story. The testing included some portion of every sport competition and most finals. Had this effort been concentrated on a few events, and everyone tested, the results might have been different. For it is my opinion that most of the doping is confined to the weight events and cycling. There is no practical test for detection of steroid doping.

Amphetamines, ephedrine, barbiturates, strychnine, coramine, diazepam and steroids, alone or in combination with vitamins, account for most of the substances used in the current scene of doping in sports. None of these has any legitimate place in sports, but they are used. Do they do physiologic good? Do they make winners out of losers?

All of the studies made have been of small numbers of athletes in varying states of fitness and have used performance as the ultimate measuring stick, ignoring completely the fact that performance is always variable. In some studies, the amount of expected day-to-day variation in performance is greater than the benefit ascribed to the drug being tested. No drug shows any consistent benefit to a well-trained, top-class athlete whose normal performance varies within a narrow range.

3. DEFINITION OF DOPING

The definition of doping according to the Medical Commission of the IOC is:

"Doping is the administration of or the use by a competing athlete of any substance foreign to the body or of any physiological substance taken in abnormal quantity or taken by an abnormal route of entry into the body, with the sole intention of increasing in an artificial and unfair manner his performance in competition. When necessity demands medical treatment with any substance which because of its nature, dosage, or application may be able to boost the athlete's performance in competition in an artificial and unfair manner, this is to be regarded as doping."

Unhappily, even this definition seems to hold out a hope that there is a magic substance that makes winners, and dope control programs that check only winners tend to fix in the minds of everyone that doping and winning are connected. "But it ain't necessarily so."

"Doping" to improve performance has according to Dirix accounted for at least 30 deaths in sports, and it is for this reason that dope control programs were initiated.

Early atempts to control the practice of doping in sports involved inspection of luggage, equipment and quarters, as well as physical examinations just before the event. These were a total failure. New rules and regulations were promulgated by several of the sports groups, and these also failed dismally. Attempts at education failed, but these perhaps were inadequate.

In 1910 a Russian chemist devised a means of testing the saliva of horses for dope. This opened the door for the beginning of the first real dope control program. In 1935, the Florida Racing Commission estimated that 30 to 50 percent of all race horses were doped. In 1969, the same source indicated that less than 1 percent were doped—proof that dope control works, at least with horse races.

With human athletes, well-run dope control programs would decrease the amount of doping, and this combined with a sensible education program would go a long way toward eliminating the problem entirely. But the education component has to include some strong words about the pseudoscientific experimenters who test six athletes with steroids, special diet and weight training programs, attach all benefits derived to the steroids, and then send out 10,000 reprints describing the wonders of this medication. The facts must be presented to physicians so they will accept them, and to coaches and athletes so they will both understand and accept them. No one has yet been able to accomplish this.

The negative side of the doping scene, that is, the administration of a substance to slow down an athlete, or to make him ill, is largely a thing of the past. But not too long ago, top college football teams brought their own water supplies with them when they traveled.

Current policy on doping control is variable—almost none in the USA—but most international events have some control program. Some nations (France and Italy) have federal laws prohibiting doping. Most federations are following the IOC guide lines. Every Olympic program, both Summer and Winter Games, has a strict control program.

GUIDELINES FOR A DOPING CONTROL PROGRAM

The key ingredient is experience of the personnel that will be used in each phase of the program—selection, collection, laboratory and administration.

Urine is the biological fluid of choice with laboratory analysis by gas liquid chromatography and mass spectroscopy to identify the metabolites of doping substances. The laboratory must have had the experience of detecting these in small quantities. Any laboratory can return a negative result.

4. THE NATURE AND EXTENT OF CURRENT EFFORTS

Presented to you in Mr. Pritchard's testimony. I would only add two other publications for your consideration.

A. Baseball vs Drugs: Office of the Commissioner, 650 Fifth Avenue, New York, New York 10019.

B. Doping: The official booklet of the IOC Medical Commission, Chateau de Vidy 1007, Lausanne, Switzerland.

C. A bibliography which I have compiled (copy attached).

5. SUGGESTIONS AND RECOMMENDATIONS TO FACILITATE THE PROPER USE OF DRUGS IN ATHLETIC COMPETITION

The solution of this problem, as with every other problem, depends on an accurate definition of the incidence of doping, and the identification of the substances being used. This can be accomplished by a dope control (testing) program which tests every individual involved in a particular event (National Championships). When this information is available, a factual educational program could be constructed. To be successful, the educational program should be designed to be presented in the early educational years, but it should also have components which could be used at those educational levels that develop our teachers and coaches. Anything short of this will have only limited chance for temporary success.

LIST OF DOPING SUBSTANCES

Moerman E. (1964). In Doping Proceedings of an International Seminar, editors De Schaepdryver A. & Hebbelinck M., pp. 73–82, London, Pergamon.
Noirfalise A. (1965). J. Chromat, 20, 61–77.
Noirfalise A. (1966). Annls. Biol. clin., 24, 934–956.
Ristic S. & Thomas A. (1962). Arch. Pharm., Berl., 295, 524–525.
Waldi D. (1964). In New Biochemical Separations, editors James A. T. & Morris L. J., p. 188, London : Van Nostrand.
Wesley-Hadzija B. To be published.

The IOC Medical Commission approved the following list of doping substances at its meeting in Munich on 19th May, 1971.

- (*a*) Psychomotor stimulant drugs, e.g.
  - Amphetamine.
  - Benzphetamine.
  - Cocaine.
  - Diethylpropion.
  - Dimethylamphetamine.
  - Ethylamphetamine.
  - Fencamfamin.
  - Methylamphetamine.
  - Methylphenidate.
  - Norpseudoephedrine.
  - Phendimetrazine.
  - Phenmetrazine.
  - Prolintane an related compounds.
- (*b*) Sympathomimetic amines, e.g.
  - Ephedrine.
  - Methylephedrine.
  - Methoxyphenamine and related compounds.
- (*c*) Miscellaneous central nervous system stimulants, e.g.
  - Amiphenazole..
  - Bemigride.
  - Leptazol.
  - Nikethamide.
  - Strychnine and related compounds.
- (*d*) Narcotic Analgesics, e.g.
  - Heroine.
  - Morphine.
  - Methadone.
  - Dextromoramide.
  - Dipipanone.
  - Bethidine and related compounds.

This list is not complete. Other substances may still be added.

Figure 1
A
Amphetamine excreted (mg base)
B
Time (hr)

-●-
Cumulative urinary excretion of amphetamine under normal

△
alkalide

-○-
acidic

(–)
Urine conditions after oral administration of 15 mg amphetamine

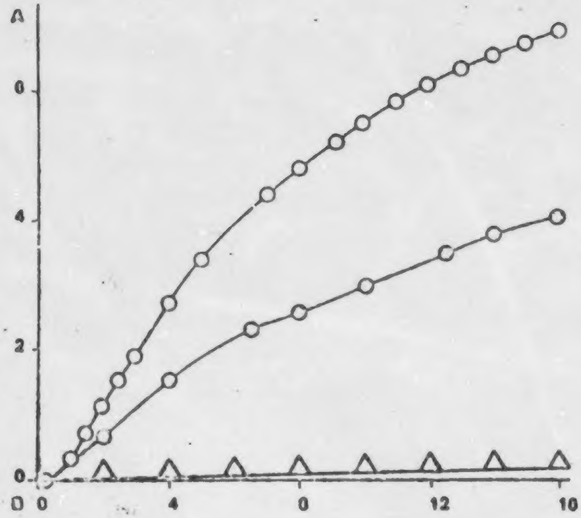
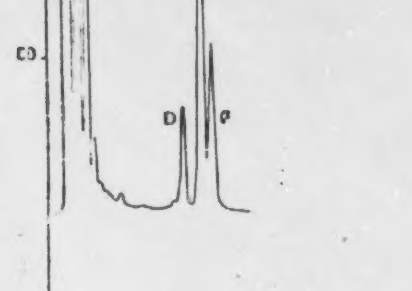
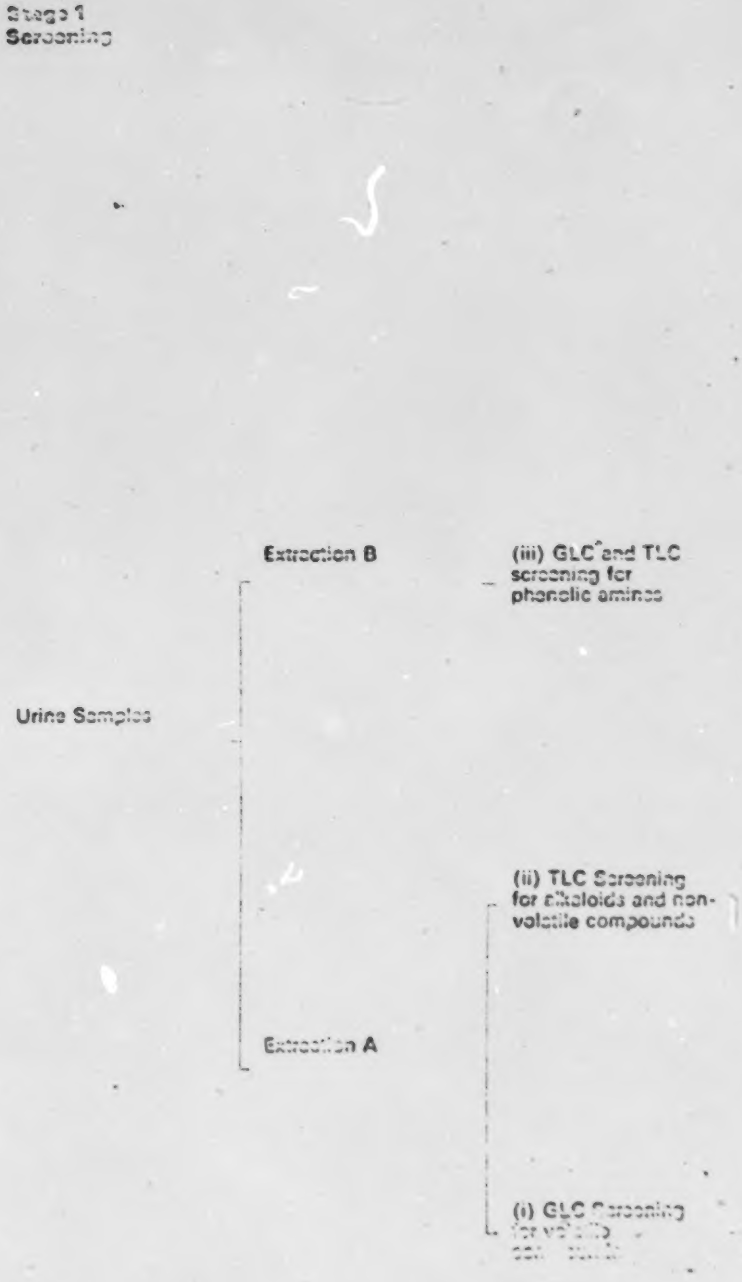
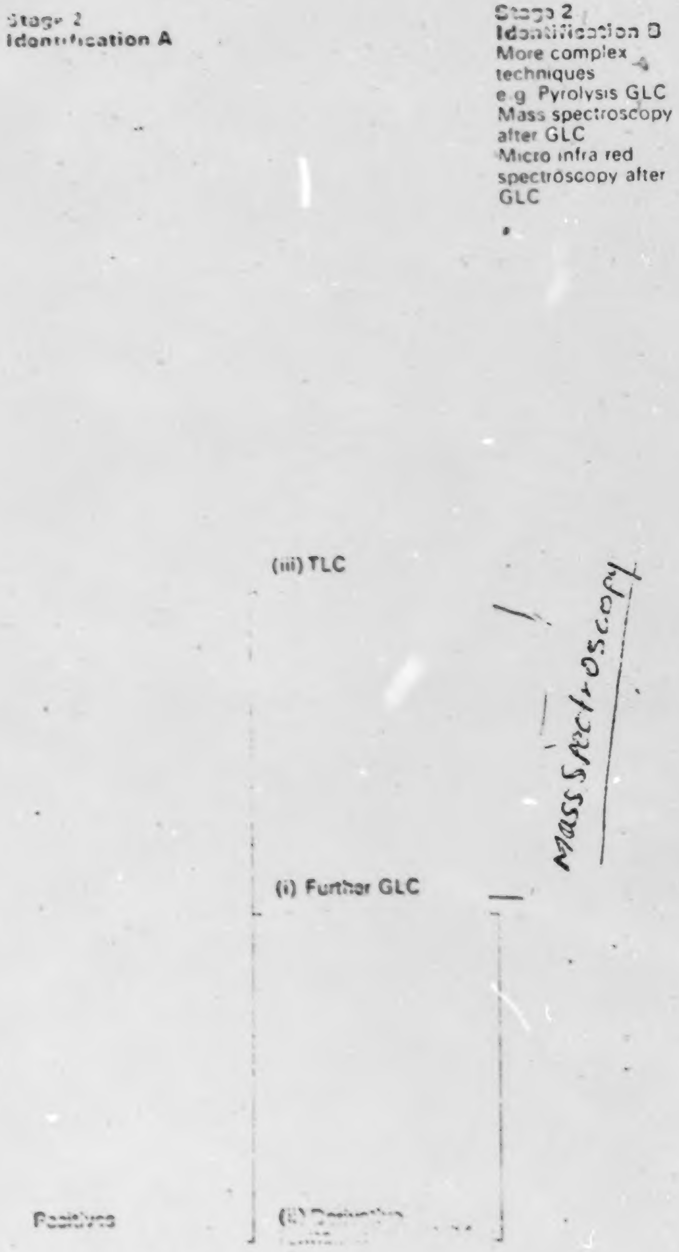


Figure 6
Reproduction of a chromatogram obtained on analysis of a racing cyclist's urine showing the presence of methylamphetamine and its metabolite amphetamine in the urine

A
Time (min)
B
Detector response (2 × 10⁻¹¹ A.F.S.D.)
C
Ether + urine constituents
D
N : N – dimethylaniline
(Internal marker)
E
Methylamphetamine
F
Amphetamine




Stage 1
Screening
Urine Samples
Extraction B
Extraction A
(iii) GLC* and TLC screening for phenolic amines
(ii) TLC Screening for alkaloids and non-volatile compounds
(i) GLC Screening for volatile compounds


Stage 2
Identification A
Stage 2
Identification B
More complex techniques
e.g. Pyrolysis GLC
Mass spectroscopy after GLC
Micro infra red spectroscopy after GLC
(iii) TLC
Mass Spectroscopy
(i) Further GLC
Positives
(ii) Derivative

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Dr. Hanley. Yes.

Senator Bayh. That is different.

Dr. Hanley. That is the negative side of the picture.

The current policy on doping is variable. Almost no standardized policy in the United States, most international events do have some

[A brief recess was taken.]

Senator Bayh. Our next witnesses are A. O. Duer, the executive director and Donald Spencer, M.D., coordinator of the Medical Aspects of Sports Committee, National Association of Intercollegiate Athletes(NAIA) of Kansas City, Mo.

STATEMENT OF A. O. DUER, EXECUTIVE DIRECTOR, AND DONALD SPENCER, M.D., COORDINATOR OF THE MEDICAL ASPECTS OF SPORTS COMMITTEE, NATIONAL ASSOCIATION OF INTERCOLLEGIATE ATHLETICS (NAIA), KANSAS CITY, MO.

Senator Bayh. Mr. Duer, is that the way you pronounce it?

Mr. Duer. That is right.

Senator Bayh. I apologize gentlemen for the delay. Let's go off the record.

[Discussion off the record.]

Senator Bayh. I do have some questions that I would like to put to you. There will, however, be some votes coming up very shortly and in my absence counsel will carry on with your considerable testimony. So if you would please proceed.

Mr. Duer. Yes, sir, I am A. O. Duer, executive director—secretary of the National Association of Intercollegiate Athletics. I might add third vice president of the U.S. Olympic Committee.

Our organization is one of 565 member colleges and universities having established now 15 national championships each year. Our two basic promises are that athletics should be an integral part of the total educational program of each institution and not a separate promotional adjunct and that athletics should be for education, health, citizenship, leadership, and character.

We're fully aware that athletics has become one of the two major forces in international politics and thus the pressure that has been placed upon them. Of course, our organization is not one of those million dollar ones that have been referred to. The originator of the NAIAB, now the NAIA, said that our organization was built on postage stamps and guts and that is literally true in that these are colleges on a level of competition whose receipts do not begin to pay for the programs, even in basketball, in many instances, where they all have that sport and consequently we do not have the extreme pressure.

Senator Bayh. Let me suggest, if I may, Mr. Duer, that I for the record recognize the significant contrast among the levels amateur athletics. The NAIA has made a substantial contribution, and because you are not as subjected to these kinds of pressures, we can accurately call them commercial pressures, perhaps you can candidly advise us as to where we should direct our attention.

Mr. Duer. I was going to lead into that. Any athlete worth his salt, the higher up on the ladder you get, the greater pressure he himself exerts, develops within himself. We have many athletes who go from our organization to our national championships and on to the Olympic Games and naturally, regardless of the nature of that program and their institution, they are subject to these pressures.

I do not know where you could draw the line. Where the pressure exerted makes the difference. I can say this though, that this is what athletics is all about. It is in placing our future leaders under pressure of athletics so that they will not break over that ethical and moral line in order to win, so that you will have leaders in politics, in every way of life which will have had this experience. They will have been through the test, that is what athletics is, a test for future leadership and I know of no rule you can impose but this is a reality that we must place these people under pressure and with it teach them morality, character, leadership, so that they will know when; so they can meet these tests in future areas of the community, national, international leadership.

Now, we have practically no income from most of our events, even in national competition. We have about 12 national championships which the organization pays part of the cost.

Senator Bayh. Excuse me, I just received word that I must go over to the floor. I have gone over all of these questions. There are several I would like asked to expand upon your prepared testimony. Please proceed. I will read the hearing this evening.

Mr. Duer. I will be very brief, because I want Dr. Spencer to speak.

Senator Bayh. I also want to hear Dr. Spencer.

Mr. Duer. As I have sat here listening to the testimony of experts and I consider Dr. Hanley one of the greatest experts in the United States, I worked with him in the Olympics over long periods of years. I know him to be both an expert and completely honest and honorable man in his interpretations.

The NAIA considers the use of drugs and medications without specific medical authorization to be unethical practice and you pointed out to me, what is specific medical authorization. I think it has been pretty well pointed out that can be anything from a chiropractor, horse doctor, but specific medical authorization must be given by a practicing physician who is so authorized to administer and give a prescription for drugs. Anything over that would be unethical in our interpretation.

The NAIA further believes that all drugs utilized in sports even prescribed by a licensed physician with specific instruction for their use must be there. The NAIA, with the support of its member institutions adopted the following policy in March, 1972 for controlling the use of alcoholic beverages, and non-therapeutic drugs and tobacco at NAIA sponsored events. That goes much further of course than just the drug problem. That goes to some moral and ethical problems that we found are the real problem in athletics, having to do with sale of beer and liquor in a stadium which of course has caused violence instances which we feel we must control, so we tied all of these together.

"Beer, wine, liquor, or any form of alcoholic beverages or any non-therapeutic drugs shall be prohibited from having any part in the district, area or national events sponsored by the National Association of Intercollegiate Athletics (NAIA). This shall be interpreted to prohibit the sale or sponsorship of advertising programs in radio, television or any other promotional medium. It shall also prohibit the bringing of alcoholic beverages or non-therapeutic drugs into or at the site of an NAIA sponsored meet or event."

We're aware of the very great difficulties in administering this type of policy but we do ask that they be prohibited from use in programs, radio, television sponsorship or in any way used to promote any NAIA sponsored events and all 565 of our member institutions follow this policy while it is not mandatory. It is requested. There has been much talk over the past year concerning the use of drugs by athletes. Current factual information has not been available to substantiate or refute such talk. Seeing the need for such a study, the NAIA approved a drug testing program in March of 1972 which would screen all athletes participating in NAIA national events. The proposed drug testing program would encompass athletes throughout the United States participating in the 15 national events held for our 565 member institutions. This study is awaiting funding at the present time. The proposed drug study has as its main objective the determining to what extent drugs are being used in athletics. If the results show a sufficient number of athletes are involved with drugs, then a drug training program will be instituted within the NAIA member institutions.

The NAIA strongly believes that the detriment of drug usage in sports must be emphasized at all levels, including coaches, trainers and team physicians as well as the athletes themselves. We now have what we call workshops in the various districts, we have 32 districts in the United States. We would have to have posters and articles which would inform athletes, and the faculty of just what the facts of life are and see that they know what should be done. They would be informed.

Now, I think that I shan't take more time, we have developed the policies proposed in the NAIA drug program which I am going to ask Dr. Spencer, our coordinator, who is also chairman of the Missouri State Committee on Medical Aspects and Sports. He is going soon to Russia as one of the doctors of the World University games and he is the one who has proposed our study and I am going to ask Dr. Spencer to begin and tell you about it. If there are any questions that you want to aske me about this I will be glad to answer them for you.

Dr. SPENCER. We suggested the possibility or the needs of the drug testing in the NAIA approximately 2 years ago. The subject was discussed with the executive council of the NAIA initially. The response was that we don't really think we have a problem, let's put our heads in the sand and subsequently we all thought about this, we discussed the possibility that we do have a drug problem. There is no way of finding this out unless we drug test. To date there have been no studies to determine the extent of drug usage in athletics. It is all pure speculation. It comes from articles, books written by worn out professional athletes who have left with a bitter taste in their mouth. Various athletes make comments which have no basis and so we have decided the only way to determine this is to test our athletes for a 1-year period and find out if there is a drug problem. If there is in our institute we will institute a drug training program throughout the NAIA.

A preliminary test was run during the indoor tract meet in 1971. We established physicians in the training room right off from the arena and athletes could come in 30 minutes prior to competition. I think, they run one trip around the track and then they come in and urinate. So we had athletes coming in and this was at regular intervals and the physician would ask for a sample of urine. This is random sampling, no pressure was placed on the athlete to give the sample, if he said no, if he turned pale, if he went out the door we don't chase him.

We had approximately 400 athletes participating that night; 41 samples were obtained and the samples were taken to the toxicology center at Children's Hospital in Kansas City, frozen and analyzed by the toxicologist. For the 41 samples, one sample contained glycol which is a substance which is in the small cones that you see in urinals. We had one fellow, he was apparently afraid of what we were testing and he blew his test by putting glycol in this urine and after having set up over the weekend in the deep freeze it still hadn't frozen, so we have no idea what was in this urine. The remainder of the 40 urines were tested. These were done by cooling 40 urines, leaving a portion of each urine not cooled, and testing these for various drugs.

In these urines four were positive for amphetamines, three were positive for tranquilizers, eight were positive for solicilates, 10 were positive for caffein, and this total, 25 out of 41 athletes having some type of drug in their urines. I have no criticism of any type of drug here. This was done purely to determine if we should pursue and go ahead with planning a drug testing program.

After we received these results we met again and the NAIA executive committee went through the coaches and we sat down with an attorney to determine the legality of the testing of athletes because they can stand on their civil rights and various other claims and say you can't test me.

The NAIA again with the full intent to determine the extent of drug usage, not to disqualify the athlete, and not to identify the athlete or his school after testing, agreed to make the NAIA eligibility ruling change at which time the athlete would not only have to be enrolled in NAIA, he would have to have his grades average and be carrying so many hours, he would also have to submit to testing at the national events. This I think was an extremely significant move by the NAIA to show their interest in determining if we do have a drug problem. This was carried out last year and then we met with the chemist from the Midwest Research Institute in Kansas City. They have been conducting tests on the fatal accidents for drug detection in fatal accidents and they were quite interested in pursuing this problem with us.

The grant was—we have applied for a grant with the Department of Health, Education and Welfare and if we obtain this grant we will test approximately 3,000 athletes in 15 national competitions during 1974. This will consist of testing all of the athletes that participate. Each athlete will be marked with a stamp on his hand or some other device, the technical aspects of checking the urine, we have consulted with the persons dealing with this in the Olympics and heard both pros and cons on collecting the urine following the competition or just prior to the competition. I am sure we're going to run into problems in a technical aspect since this has never been done on a full-scale basis. I am sure we will have to back up and redo some of these things. However, no athlete will be allowed to go to the starting line without having stamped on his hand something saying that he has donated his urine to our testing program. We are not going to disqualify nor are we going to identify the athlete. This is a purely an educational purpose, purely to determine the extent of drug usage.

Mr. Rector. I think you indicated that several years ago the Association was characterized as having a head in the sand attitude; that there was a change with regard to the issue of drug abuse by athletes; and that after this change in attitude you worked out the details of the preliminary study that you mentioned.

What occurred in this interim period? What factors contributed to this shift in attitude?

Dr. Spencer. I think this is purely a relationship between us and sports that we were both reluctant to get involved in something that we really didn't know. We did not want to promote a program and come up and say gee whiz, all of our basketball players pop bennys. This we initially felt we might not want to become involved in.

After having discussed this our definite goals were brought out more clearly, the executive council of coaches realized this problem and became very enthusiastic over it. At the present time I feel that they are somewhat more enthusiastic than I am. They are very much in favor of doing this. I think this is something that occurred in sports medicine that, this has been brought out this morning, the relationship to the athlete, the relationship between the athlete and the doctor that they—my basic attitude toward sports. These are fine activities and it is really a crying sin to think somebody has to get high to participate in these kinds of activities. I have heard professional athletes and I have talked to professional athletes that have told me, gee Doc, I can't go out there without getting high. I personally don't think I have to get high to go to the operating room, I think a professional athlete is basically the same as a professional doctor. We operate at a certain level, we're not professionals if we don't operate on that level. This is true of the professional athlete. But I think the reason that the NAIA decided upon doing this testing, is that it is just purely a matter that we have established, we want to establish what our goals were and when it became quite clear none of us were trying to make a dollar off of this, we weren't trying to find out anything other than is it a problem and should we establish an educational program for it?

Mr. DUER. If I may say a word for the executive committee. We came to the conclusion that we had a moral responsibility, that this has generated a problem. It had been accentuated in the public eye, it had been accentuated in professional athletics and that reaches down each year lower in the scale of competition so that it was becoming commonly known and used by all athletes and by more and more citizens so that we had a moral responsibility to protect athletes; not only ones who use it, but protect athletes from taking such things and spending thousands of dollars on drugs that had negative or no effect upon their participation. So we need no ax to grind. We simply felt we must undertake this study as a part of the educational processes of our organization.

Mr. RECTOR. I want to follow up on something the doctor mentioned regarding the conversations he had with professional athletes. You indicated that they were popping bennies or some type of uppers or stimulants to be able to perform. I imagine some of this occurs on Sunday afternoons? In light of your experience with professional athletes would you elaborate on the extent of these practices? Is this kind of thing marginal or widespread?

Dr. SPENCER. I have taken care of professional athletes, both as private patients and as a team physician. Both in soccer and football. I know these athletes have taken drugs. I know that some of them feel this is a necessity. This is a part of their means of playing football. I think that this is something that you, as one professional quarterback made comment on a symposium on drugs last year, he said the local newspaper comes out and says our team needs the edge to win this Sunday. And Sunday morning comes, and somebody comes by with a handful of green pills and says here is the edge. They say we're athletes, we're told when to practice, when to dress what plays to call, what color of uniform we are going to wear that Sunday and when to go in the game and when to come out and when somebody comes by and hands you something says here is the edge, this again is an order and you don't ask any questions, you take it. I don't think this is true that all drugs that are taken by professional athletes are obtained by the—obtained from the physician, I think that a good many of them are, as mentioned earlier this morning, obtained by retail men who are around and think this needs to be associated with professional athletes and this is just to get to know him and this is not just a type of association. I think these drugs are more and more difficult to obtain. I recall the medical school when the detailed men would set up their displays and we would walk by there and they would have their amphetamines, and a good many classmates would get their amphetamines to take and this was so they could stay up all night and take their tests the next morning and these have been proven to be of no value. I think, too, I agree entirely with the previous testimony, there are no drugs that show that they increase or make the athlete a better athlete.

I think most are taken as props, substitution for good training programs and I don't feel that an athlete ever participates 100 percent or as a good many people will be quoted in a newspaper, 110 percent. I think that a good athlete puts out 90 percent and is talented and is going to be a winner.

Mr. **Rector**. I would like to follow up your comment about detailed men. Our committee has jurisdiction over the laws that pertain to the production and distribution of controlled substances. I would be particularly interested in knowing as much as possible about these alleged practices of the detailmen, particularly regarding amphetamines made available to professional athletes whose friendships or other accommodation they are seeking.

Dr. **Spencer**. I could not be very specific, I am an orthopedic surgeon and the work I have done in the past, I am no longer associated with a professional team, the work I have done in the past is on a consulting basis and I did not have day-to-day relationships with the athletes. This is all hearsay from athletes as to how they obtain their drugs.

Mr. **Rector**. That is a real problem in this whole area. The people who are on the scene are not talking and there is often good reason. The people who have not been there for a period of time, aren't really current. Athletes, professional and amateur realize that such comments may jeopardize their career. We heard many comments that detail men hang around locker rooms. Can you tie this down more specifically?

Dr. **Spencer**. Prior to the reclassifications of amphetamines as being a drug requiring your B.&D. number, I received a call from a pharmacist to refill this patient's amphetamines. Again being an orthopedist, I have no knowledge really of the dosage of the amphetamines and I do not prescribe these. I received this call from a pharmacist saying that amphetamines have been reclassified, would I like to write a new prescription for this fellow?

I said, how did he get it, and this was a professional athlete, how did he get the prescription originally. Well, it was called in from your office. You could call in and say you were Dr. Spencer and prior to the reclassification of this drug this person was apparently obtaining amphetamines for at least 2 years on a phony called-in prescription. As to the evidence of actual usage and I say this really, I don't know how significant this is. One afternoon following the football game I saw a professional athlete, 30 minutes after the game, he had a rib injury, we X-rayed him, and down in the lower edge you could see the white spots on the X-ray and we went ahead and shot KUB and I believe there were seven pills going from his stomach to his large bowel, and I don't know the resolugency of pills, I have never seen pills under the X-ray machine, and I had never taken a picture of them. I did not know what these were, I just know they were there.

Mr. RECTOR. With regard to the language in the NAIA policy on drugs, would you elaborate on exactly what, "without specific medical authorization" means. I think you heard us touch on this earlier with Dr. Hanley. Irrespective of the FDA regulations physicians can still write amphetamine prescriptions, for something other than narcolepsy, hyperkinetic kids or short-term diet control. When you refer to nontherapeutic uses is this within the FDA perameters or some other standards?

Dr. SPENCER. There are three types of drugs used in sports. The first are the essential drugs, they consist of tetanus protolacks, possibly flu vaccine, and your international athlete, maybe the immunization for the country you have to be traveling to. There are the drugs that treat a specific illness. Then there are what I term the titration drugs, those that you take to try to get yourself at a certain point. The latter two types of drugs have no place in sports. The third type definitely should not even be considered. These are the anabolic steroids, uppers, downers, any pill taken to increase the efficiency. The only real study that has been or has shown anything to improve an athletes efficiency is the highly trained distance runner that will train in a high altitude, this allows his hemoglobin to increase from 14 to 16 grams to maybe 18 grams and this increases the oxygen carrying capacity. You take a person to high altitude, bring him back to normal altitude, and run him for 1 day, he will have an increased ability until his hemoglobin drops.

Mr. RECTOR. What about the use of analgesic drugs–pain killers—such as novocaine or propoxyphene? Let us say you have a star halfback who experiences some problem in the first half and without the use of novocaine he wouldn't be able to perform in the second half.

Dr. SPENCER. No matter what level of sports you are talking about, that same game is going to be played 1 year later. The quarterback that has to play the second half, he may graduate this next year, he may move out of the area. If he is a high school football player he may be placed on a taxi-squad waiver, retired, or anything the next year. I don't think the use of drugs should be an excuse for a poor coach to lose a game and I think frequently this is utilized.

We have to have this man, anybody who has 40 football players on his team and a long taxi-squad who uses this as an excuse to inject something into the football players ribs or his shoulder or anything to get him on the field, I think is an extremely poor coach and I think the number of lawsuits against professional team physicians and professional football teams in the form of malpractice cases from this type of behavior. This is promoted in professional sports to get the athlete on the field. If I dropped dead tomorrow the surgery that I have scheduled this Monday will be done by somebody else. If the star quarterback on any football team drops dead tomorrow there will be a quarterback on the field next week. I think this is a poor excuse to use injury as a means of saying this is why we lost. And I don't think that any type of analgesics more than aspirin should be utilized.

Mr. **Rector.** That is particularly interesting. Dr. Cooper testified on the 18th of June representing the AMA. He drew what appeared to be some rather fine distinctions between the types of injuries and the possibility of future permanent damage to an athlete which would provide an individual practitioner on a case by case basis with the discretion to allow an athlete to play with the assistance of an analgesic. I think he made reference to a high school wrestling match. A fellow had apparently wrenched his shoulder and it was his considered judgment that the athlete could perform without any additional injury. Subsequent to being victorious in the wrestling match, the X-ray revealed that he had a cracked clavicle, which can be a serious injury. Had he known the nature of the injury he wouldn't have allowed the young athlete to proceed. There seems to be difference of opinion?

Dr. **Spencer.** I think a good guideline here is that any athletic doctor or jock or whatever you want to term it, is not the main thing, there are lots of people who think it is, there are lot of doctors who think it would be really neat to be one and actually just take care of a group of people who have the same injuries as the housewife, the little kid down the street or anybody. The quarterback breaks or dislocates his hip playing football, this is really a big deal. We read all about the treatment of dislocated hips, grandma breaks her hip falling down, getting up to go to the bathroom in the night, this is no big deal. I think if you use a guideline in treating athletes as they are no different from anyone else, they might be doing something different when they sustain their injury, but if I will inject the knee of a blast furnace operator and put him back in front of that blast furnace to work and the company who is responsible for his insurance will do this, then I think maybe I could justify my injecting the knees of a football player so that he can go out and play football. I don't think there is any athlete of any type and any other patient that comes into my office, they are all the same as I say. The game will be played again next year and that athlete will be forgotten.

Mr. **Rector.** I think that Houston Ridge case, Ken Gray's lawsuit in Missouri—we have heard from other players in the NFL—indicate that perhaps the injuries are the same but the circumstances and pressures to which they are subjected are quite different than the case of the grandmother who falls down and breaks her hip. Their livelihood may depend on whether they can perform in the second half. I think there are a number of additional ingredients involved in these sports injuries.

Dr. **Spencer.** I don't think this is true. Why should a person's reputation depend upon his future whether he is injured or not. These injuries are part of athletics.

Mr. **Rector.** I don't mean to indicate that it should.

Dr. SPENCER. And I think that probably this is instilled in a person today and I think probably to a degree this is true but if a man working on an assembly line falls under a car and is run over he receives compensation insurance which covers him and he is a comp case. If the professional, I am not sure just how a case in professional sports comes under, whether it does come under workmen's compensation, I know they do in New York, I don't think they do in Missouri. If a football player is injured, why not have the compensation laws apply to this and it certainly would then the player would become compensated if he is not able to work and able to return to work.

Mr. RECTOR. I think that is an interesting suggestion. But when you put it in the context of a profit making endeavor, such as the 26 teams in the NFL, the fact that you can economically compensate the particular athlete is often not adequate—I believe that the primary interest, is having a Larry Brown or an O. J. Simpson in there in the second half. Some players claim that they must play come hell or high water; that contract renewal for the next season may depend on whether you're willing to play in the second half.

Dr. SPENCER. One of the primary reasons why I do not deal with professional athletes any more, I participated in sports in my school and college and I think that is the great training as Mr. Duer established this morning. However, I don't think that this is any more than leisure time activity and in college it is an extracurricular activity. I find it difficult to place this much emphasis on playing a game. I'd like to play tennis every Thursday afternoon. This is Thursday afternoon and the person I play tennis with is not going to die and I don't think he will have a fit or anything else because I am not there. If O. J. Simpson is not on the football field on Sunday. that is too bad. Maybe the national TV doesn't like it, maybe the coaches don't like it, but this person is not capable of participating in a sport, then he should not be allowed to participate in the sport.

Mr. RECTOR. I would like to explore your comments on the testing of the track and field competitors. I believe you mentioned that there were——

Dr. SPENCER. Forty-one athletes were tested.

Mr. RECTOR. Forty-one athletes were selected on a what you call a random basis, but actually on a voluntary basis.

Dr. SPENCER. Voluntary.

Mr. RECTOR. There are 50 athletes here and——

Mr. DUER. They were not selected.

Dr. SPENCER. These were persons that we asked.

Mr. RECTOR. I believe you said, individuals came in and you mentioned the drug test and they had the option to split. You indicated that 4 of the 41 indicated positive for amphetamines.

Dr. SPENCER. Yes.

Mr. RECTOR. And I believe you said 10 indicated positive for caffein.

Dr. SPENCER. Caffein.

Mr. RECTOR. Nearly 10 percent indicated positive for amphetamines?

Dr. SPENCER. Yes.

Mr. RECTOR. In a situation that was voluntary?

Dr. SPENCER. Yes.

Mr. **Rector**. Were you able to assess whether the caffein detected was consistent with ingestion of one or two cups of coffee?

Dr. **Spencer**. The toxicologist just said there were 10 positive for caffeine, which would be coffee, soft drinks, tea and I don't know if gatorade has caffein in it or not.

Mr. **Rector**. So you do not have an assessment of the amount of caffeine used. It could have been used as a stimulant to improve performance or evidence nothing more than a cup of coffee?

Dr. **Spencer**. This was a test to determine the presence, not the quality.

Mr. **Duer**. This test was done primarily for an educational process, it is living up to what we're doing now to get the coaches to be aware .and the athletes to be aware of the need of this program.

Mr. **Rector**. I would think that these results would persuade you to look a little further. Particularly since a voluntary test turned up 10 percent indication of amphetamines. Was there any crosscheck to determine whether individuals were taking legitimately prescribed drugs?

Mr. **Duer**. No.

Dr. **Spencer**. Again, this was a matter of being in the training room with plastic cups and asking a person as he walked in if he would give us a urine sample.

Mr. **Duer**. I would like to make one more point, if I may, that hasn't been mentioned here. We had an athlete who was an outstanding athlete who since has graduated and gone into the pro ranks of one of the sports. He has become a world champion. I know the history of this athlete as to his use of steroids. I know that his coach knew he was using them and he thought it was helping him. I think there is a real danger here of the following, the thinking because he used steroids he became a world champion and I think that is leading many athletes into false traps for the use of these and wasting money on these and that is the reason I feel not only our organization but all of the organizations including the pros should do a careful study of what is the present situation, how badly are we being damaged by these drugs in amateur and professional sports. Of course I am only concerned with the amateur.

Mr. **Rector**. I think if viewed from the perspective of a young weightlifter, it seems as if there could be a real credibility problem in assessing various opinions on amphetamines and steroids. If a champion weightlifter says that without steroids and amphetamines he would have never made it, and on the other hand the school physician tells the youths to play it straight; to put out a bit more little extra commitment—and they can make it to the national championship, relatively speaking you might be quite lucky, if many youths listened to the physician.

Dr. **Spencer**. I think today we have emphasis on certain sports currently, it is a need to a football player, I don't think everybody is physically designed to play football. I think there is a sports that each of us can handle even the handicapped individuals, but I don't feel that everyone can be made into a great big person. I have had patients come to my office, the mother and the father were both small individuals and they had a son that was already a half of a head taller than the father, and they asked me is there some pill that I can give him to make him big and strong and that is just strictly—we can't do anything about it.

Mr. RECTOR. I recall Dr. Dooley's testimony at the legislative hearings in California before Assemblyman Campbell in 1969. Dooley talked about prescribing steroids for youngsters who were in the awkward stage—15 or 16 years old, 6 feet 1 inch, a little on the lean side. He seemed to be implying that the practice of medicine involves kind of an averaging attitude. That these fellows were a little leaner than the others to make things even across the board you had to improve their physiques.

Dr. SPENCER. You see where all this comes about. You see on a given day each month 90 percent of the fertile females almost 90 percent, all take their first pill which will terminate 28 days later, this is the attitude of the American society today, a pill for everything, take something and regulate everything, regulate reproductive cycles, you take a pill, you have two kinds of vitamins, one plain and one iron for the amount of bleeding she does during her menstrual cycle. We're really hung up on drugs. I attended a meeting one time and the first slide, this was on drugs, the first slide out was a picture of a lazy susan sitting on the average American breakfast table filled with different colored pills in each little tray and I don't think it is too far from wrong. I think you can go out and drive and stop a person from driving down the road and not only check him for alcohol, but check him for the various drugs and see the extent of drug usage by the American population or ask a room of 100 people have you taken some type of pill since you came up here today.

Mr. RECTOR. In the last couple of weeks several individuals have alleged that some NFL players were supposedly involved in some kind of drug traffic. Many responding to these charges apparenly hold to the archaic distinction between so-called hard drugs and soft drugs. The implication being that if someone is involved with so-called soft drugs—amphetamines, barbituates and similar drugs—you are not really dealing with something that can lead to drug dependency. One of the things that Senator Bayh has attempted to do in the last couple of years is to focus attention on the fact that the barbituates, and to a lesser extent amphetamines, can involve a habit and dependency that is every bit as life-threatening and debilitating as the habit associated with so-called hard drugs. Apparently hard drug—soft drug dichotomy is emerging in this area and in some respects by focusing on the "hard drug" aspects of this drug controversy one can avoid the real issues.

Dr. SPENCER. I think this is true, like the alcoholic, there is not one specific date that he becomes an alcoholic. When he drinks a certain amount, if you go to the training room of a high school or college professional teams and view today the training aids as compared to what they were 20 years ago when I was in college, it is an entirely different thing. The majority of these changes have been in a pill form. Today you have wheat germ pills, vitamin pills, butterfly pills, sugar tablets, vitamin C tablets, and they are all in a tablet form. So you could quit chewing on a dextro tablet and start chewing on a benny and what is the difference, probably just a little difference in taste and it is all a concept of putting something in and swallowing it before you can peak. Once you develop this attitude you are going to take anything you can.

Mr. RECTOR. The thing I was trying to focus on was that when several professional athletes were questioned about the use of drugs, a statement was made about the "typical" housewife, who was popping pills. Indicating that is not a serious problem. There is need for a reassessment of drug problems. Many individuals don't realize that the kinds of problems associated with amphetamines and barbituates can be very serious and dangerous.

Are team physicians required to supply the association with copies of records indicating their prescription habits or the kinds of drugs that they have available as a team physician?

Dr. SPENCER. Are you talking about professionals?

Mr. RECTOR. Within your organization.

Dr. SPENCER. Are they required to provide a list of the drugs that the athletes would be on?

Mr. RECTOR. Provide a list of drugs that are administered or dispensed to the athletes and provide a list of any drugs that are ordered or available to the physicians.

Dr. SPENCER. No; I think this is true pretty much throughout the United States—we have very little medical records on these persons when they arrive in Kansas City. We assume that the college or the university that they attend has done their physical examinations on the persons. We had no communications with the team physicians. These boys, and again we're dealing with a very low-budget type project, these boys come in to Kansas City to the track meets practically running in their track shoes because there are financial problems with the schools they come from and they are not bringing their team doctor and team trainer and arriving on a jet airplane. They are traveling by a car a lot of the time. So there is no—not anything that has been done along these lines. I know, however, also in professional football, at least up until 3 years ago, a good many of these players did not have electrocardiograms and very minimal physical examinations prior to competition and I think this has been brought out and emphasized by some bad purchases of college boys who have had bad knees and somebody paid a bundle for them.

Mr. RECTOR. In light of your proposal to expand the urineanalysis program have you considered requiring athletes to report to the team or other responsible authorities the circumstances under which they are receiving any drugs? In this way the athletes would be protected if they were using drugs properly.

Dr. SPENCER. Again, we are not trying to detect drugs to eliminate the athlete. We are going to do drug testing to see the extent of drug usage.

Mr. RECTOR. Well, I think properly prescribed drugs would show up in urinanalysis.

Dr. SPENCER. This would mean nothing and they will be tested for alcohol, there will be numerous drugs they are going to be tested for. All we're doing is statistical studies to determine the extent of drugs used in athletics. We don't care how they got them, whether they are taking them for anything.

Mr. RECTOR. So you're not focusing on drug abuse, but on drug usage.

Dr. SPENCER. Everyone has speculated on do athletes take drugs, how much do they take, here is a large group of athletes that we have gotten consent from the NAIA to test. No one else has even been able to clear through their executive committee to drug test. We now can do a statistical study.

Mr. RECTOR. I don't mean to imply criticism. What I am thinking about is the Delaware State affair a few years ago where a urinanalysis test found 13 or 14 athletes positive for cocaine, heroin, amphetamines. It was later revealed, however, that six or eight of those athletes had been given phenobarbitol by a physician under circumstances that were consistent with medical practice.

Dr. SPENCER. An athlete who takes phenobarbitol and has a seizure, it is very questionable that you have 14 athletes attending one meet that would have a seizure disorder. This I am sure deals with should an athlete sleep before a football game.

Mr. RECTOR. I think these cases involved the use for sedation and not as an anticonvulsant.

Dr. SPENCER. Well, how necessary is a night's sleep. Maybe if this athlete is concerned about what he is going to do the next day enough that he can't sleep, he might really run great. I think all of the psychological studies have been done on athletes of why you have a good day and what can you make of your good game and why you can't repeat this, and any person who has participated in sports knows that at one time, some night, no regularity in sleep or anything, they go out on the field the next day and they couldn't miss the basket. They couldn't do anything wrong. So they try to repeat this with pills and you can't do this, you do not have to sedate somebody the night before a game. You're putting him out, waking him up, giving him something so he will not be hung over from his sedative.

Mr. RECTOR. Many would agree with that medical point of view, but I think you are aware that there are a number of practitioners who have a different perspective and some athletes might be put in a unfair position. The doctor could properly prescribe a sedative but it could subject an athlete to charges of drug abuse.

Dr. SPENCER. It is, I have never seen a person die from lack of sleep.

Mr. RECTOR. All right.

Dr. SPENCER. They just don't do it. If you don't sleep tonight, you are going to sleep well tomorrow night.

Mr. RECTOR. I tend to agree with your opinion, but I just wanted to get this clear for the record. We talked with numerous physicians in the medical community, during our efforts to more strictly control production and distribution of barbituates, who believe that there is a great deal of efficacy to the hypnotic use. I would like to move on to a hypothetical question. If a team physician is aware that an athlete is using amphetamines, steroids, and other drugs in violation of association policy, what action should the physician take. Secondly, under what circumstances would the physician-patient relationship prohibit reporting of drug abuse by a physician to a trainer, coach or anybody else?

Mr. **Duer.** To this time no compulsion is made for him to report anything to anybody. We have this policy, we think it will have an effect. What we will do in the future after we have done these tests, we cannot predict, it depends upon the results of the tests what we find out, but at the present time the only test we give that has any real significance is that we do ask our officials for our football, basketball, to send us in a physician's statement on that physical—what their health is.

The reason for that being we had an official drop dead in the middle of a basketball game a few years ago so this is how this got started. But this will depend on the results.

Mr. **Rector.** Suppose a physician from X college, brought to your attention the fact that six players on Y team are heavy into amphetamines and it turns out that the doctor obtained that information from the patient-doctor relationship. Does this amount to a break of privilege?

Dr. **Spencer.** I feel again that a team doctor also takes care of patients and I don't think that this doctor would hold back the fact that the athletes he was sending to compete in a national event had a positive urology. I don't think he can hold back to the association that this fellow was taking bennies. I think if it is required by the association to know anything abnormal in a person's medical condition, then I don't think that the fact that the person would be taking amphetamines would be breaking down in a confidential type thing.

Mr. **Duer.** I think we are one step away from that at this point. We have made the policy, our next step would be to ask the team physician or the doctors if there were any violations of this policy.

Mr. **Rector.** One last question. You mentioned that you would establish a drug training program.

Mr. **Duer.** Yes.

Mr. **Rector.** If the results of the surveys that you plan indicate a "sufficient number of athletes are involved with drugs". Have you laid out any standards as to what is meant by "sufficient numbers"?

Dr. **Spencer.** This is a base line study. We have no—41 athletes who have been tested. We know that these were tested in the Olympics, this was not a complete screen of all athletes. This again, we're talking, we're going to have to sit down and the people that will be doing our testing have computers, they deal in these type figures, we have got three different types of persons involved in this. A group of persons that are providing the athletes, we have the physicians who are interested in drugs and in athletes and we have the investigators who are going to be doing the statistical analysis for us and I think when this is all compiled and if we get the grant so that we can do it and this is sent back in and then the article is published, we can make some decision, is there a higher instance than the drug use on campus and what is the percentage of drugs, what is the percentage of college students who are taking drugs on campus?

Mr. **Rector.** The pilot study that you conducted showed 4 or approximately 10 percent positive for amphetamines. If you had tested 3,000 and found 10 percent, how would you consider that?

Dr. **Spencer.** That is pretty high.

Mr. **Rector.** Ten percent is very high and that raises another question. On a lot of campuses in this country, the use of amphetamines is a lot higher than 10 percent. The use by athletes, to enhance performance, can be readily distinguishable from what might be called subcultural or general recreational use. I don't know if you agree with that or not. We have a bifurcated view of this thing. On the one hand you have the psychologically dependent person that depends on amphetamines and on the other hand the individual who on a week by week basis takes a few amphetamines in hoping to enhance performance.

Dr. **Spencer.** Again, the drug is being used and I think whether this is an athlete or an obese female, it is an improper drug, the MA has taken a stand on this and I would certainly agree with their standards and I think this drug probably only needs to be used in epilepsy.

Mr. **Duer.** I am not sure how much greater the instance is, whether the pressures in college football are greater than they are on the businessmen out here who are fighting to keep their heads above water and he is doing the same thing in taking this, maybe a different drug or the housewife who is in trouble with family problems and taking these drugs. I am not sure how much greater the pressures are. We're going to concentrate, and we hope others will so, that we will pull this and we will have not only the experiences of NAIA but all groups as to what is the instance of the use of drugs, which of them are detrimental, are any of them at all helpful, and that seems to be the indication now, so that this is the beginning of the process and we are proud to be a part of the beginning of this. We think it is significant.

Mr. **Rector.** Are you saying that with regard to athletics, you will accept a lesser standard than that you would apply to the business community?

Mr. **Duer.** From where I sit, the pressures are greater than when I was playing college football.

Mr. **Rector.** I think what I am getting at, there is perhaps a different ethic in the business community.

Dr. **Spencer.** I think that the collegiate and high school sports develop a person into being the type of person they are going to be. I am in a competitive world and if I lose a game they put it 6 feet under ground. That is personally to me, at least, a far greater stake than anything that is played on Sunday afternoon. I don't have to take an upper to operate and Mr. Duer doesn't have to take an upper to run the NAIA and why should anyone have to take one at any time? If you—and Harry Truman had some saying like, if the kitchen is too hot, get out, or you know, if you can't stand the pressure, don't play the game. You know, they give them butterfly pills and I remember a fellow that I played along with in college, this guy couldn't eat before a game, he would vomit. His mother thought that he was going to die. Well, the fact is he would have to vomit for a very long time and should she feed him before he goes on the field, have him go out and vomit, or should she just let him alone and let him eat after the big game is over? It is just like if you can't sleep before the game, after the game is over, you sure can afterwards. There is really no reason to take a drug and play a sport.

Mr. Rector. Well, thank you very much. If Senator Bayh was here he would note that Dr. Spencer was originally scheduled for surgery today and made a considerable effort to be here. We thank you both for your cooperation and your presentation today.

[Dr. Duer's prepared statement is as follows:]

Prepared Statement Of A. O. Duer In Behalf Of The National Association Of Intercollegiate Athletics (NAIA)

The NAIA considers the use of any drug or medication, without specific medical authorization, to be an unethical practice. The NAIA further believes that all drugs utilized in sports should be prescribed by a licensed physician, with specific instructions for their use.

The NAIA, with the support of its member institutions, has adopted the following policy for controlling the use of alcoholic beverages, non-therapeutic drugs and tobacco at any NAIA sponsored event:

"Beer, wine, liquor or any form of alcoholic beverage or any non-therapeutic drug shall be prohibited from having any part in the district, area, or national events sponsored by the National Association of Intercollegiate Athletics (NAIA). This shall be interpreted to prohibit the sale or sponsorship of advertising in programs, radio, television or any other promotional medium. It shall also prohibit the bringing of alcoholic beverages or non-therapeutic drugs into, or at the site of, an NAIA sponsored meet or event.

"The use of tobacco in advertising shall be prohibited from use in programs, radio, television sponsorship or in any way used to promote any NAIA sponsored event. It is further strongly recommended that all NAIA member institutions adopt this policy in the administration of their institutional sports program events."

While there has been much talk over the past year concerning the use of drugs by athletes, current factual information has not been available to substantiate or refute such talk. Seeing the need for such a study, the NAIA approved a drug testing program in March of 1972 which would screen all athletes participating in NAIA National Events. The proposed drug testing program would encompass athletes throughout the United States participating in the fifteen national events held for our 565 member institutions. This study is awaiting funding at the present time. The proposed drug study has as its main objective the determining to what extent drugs are being used in athletics. If the results show a sufficient number of athletes are involved with drugs, then a drug training program will be instituted within the NAIA member institutions.

The NAIA strongly believes that the detriment of drug useage in sports must be emphasized at all levels, including coaches, trailers and team physicians, as well as the athletes themselves.

Mr. Rector. The hearings are recessed until 2:30 p.m., tomorrow afternoon, July 13, 1973.

[Whereupon, at 1:12 p.m. the hearing was recessed.]

PROPER AND IMPROPER USE OF DRUGS BY ATHLETES

FRIDAY, JULY 13, 1973

U.S. SENATE,
SUBCOMMITTEE TO INVESTIGATE JUVENILE DELINQUENCY,
COMMITTEE ON THE JUDICIARY,
Washington, D.C.

The subcommittee (composed of Senators Bayh, Hart, Kennedy, Burdick, Cook, Hruska, Fong, and Mathias) met, pursuant to notice, at 3:15 p.m., in room 2228, Dirksen Senate Office Building, Senator Birch Bayh (chairman of the subcommittee) presiding.

Present: Senator Bayh.

Also present: Mathea Falco, staff director and chief counsel; John M. Rector, deputy chief counsel; Mary K. Jolly, editorial director and chief clerk; Nancy L. Smith, research director; B. Elizabeth Marten, secretary to the staff director; Lance Ringel, assistant clerk; and Catherine van de Velde, secretary.

Senator BAYH. We will reconvene our hearings on the impact of drug abuse on athletes with an official word of apology to our witnesses who have been subject to this delay, as well as those of you who are here to observe. One of the most unpredictable things is what is going on the floor of the Senate. As it so happens when we originally planned these hearings, we had no idea a measure relative to the Alaskan pipeline, of which I was a cosponsor and one of the active participants, would be voted on this morning. Then this afternoon, another measure of which I was the author, which came out of the subcommittee, was on the floor. We finished the two votes. You may have heard the bells. There was nothing I could do about that except, let me say, I recognize the significant inconvenience our witnesses have been put to and I must say to you—I don't know whether you were advised—but when I found out late yesterday, what was to happen today, we tried to reschedule the hearings, but by that time some of you were already on route or had already come from as far away as California, so we thought the best part of wisdom would be to go ahead and hold them today.

I am most appreciative of the efforts all of you have made to be here. Our first witness today is Mr. George Killian, executive director National Junior College Athletic Association, Hutchinson, Kans.

STATEMENT OF GEORGE E. KILLIAN, EXECUTIVE DIRECTOR, NATIONAL JUNIOR COLLEGE ATHLETIC ASSOCIATION, HUTCHINSON, KANS.

Mr. KILLIAN. Thank you, Senator.

Senator BAYH. We understand you have to catch a plane, so we will get right to your statement.

Mr. KILLIAN. Thank you, Mr. Chairman.

My name is George E. Killian, and I am the executive director of the National Junior College Athletic Association.

With your kind indulgence, I would like to briefly familiarize you with the organization I represent. While relatively new, the NJCAA represents the fastest growing segment of education in this country—the junior colleges. For the past 4 or 5 years, junior colleges (or, community colleges, as they are sometimes called) have been opening at the rate of approximately one a month. Predictions are that this rate will continue for at least another 5 years. Without going into the philosophy of the junior college movement, suffice it to say that this is filling a void that has long been present in our educational system. It is from our ranks that come the technicians and the paraprofessionals that this country so vitally needs.

The NJCAA represents more than 534 of these institutions throughout the United States, which we have divided into 21 regions for legislative purposes.

It wasn't until August 1, 1969, that we opened a national office in Hutchinson, Kans., where we are still situated. It was at that time that I was appointed its first executive director. For 15 years prior to that, I was athletic director and basketball coach at Erie Community College (formerly Erie County Technical Institute) at Buffalo, N.Y.

I will attempt to answer the questions that were posed to the NJCAA by Senator Bayh when he first contacted our office to arrange for my appearance here today.

1. Our organization does not consider the use of drugs to be ethical or allowable save those prescribed by a physician in a course of treatment. Local injuries, such as sprained ankles, bruised thighs, or tennis elbow when treated with drugs by a competent physician would be considered permissible by the NJCAA. It has always been the objective o fthe NJCAA in its competition to pit the well athlete against the well athlete.

2. The NJCAA has no knowledge of any use of addictive or restorative drugs by athletes under its jurisdiction. This is not to imply that our athletes are 100 percent free of the drug problem, but merely to point out to you that this has not been a discernible problem for the NJCAA.

Gentlemen, the prime reason for this has not been apparent to any degree is because of the type of program that our member institutions are currently administering. Most of our programs are of the "dedicated" or "low key" type, rather than the "pressure" or "high key" type in which other intercollegiate organizations seem to be involved. The money necessary to run the vast majority of our athletic programs comes either directly from students fees or from the general operating budget. Our members are not caught up in the rat race for spectator dollars to finance their athletic programs.

Mr. Kermit Smith, chairman of the NJCAA Committee on the Medical Aspects of Sports, recently reported to our office that in the countless State, regional, and national meetings he has attended over the past 3 years in the pursuit of his duties, he has never been aware o fany problems with drugs as far as the NJCAA was concerned.

3. Currently the NJCAA is in the process of revising its established "Code of Conduct for Tournaments, Contests and Events Sponsored

by the National Junior College Athletic Association," so that an appropriate section pertaining the use of drugs can be included. The NJCAA Code of Conduct is an established documents that has been in use for over twenty years, and is distributed individually to every athlete who competes in any of our national tournaments or meets. Furthermore, each athletic director in his own college has the responsibility of notifying his staff and athletes that this Code of Conduct must be adhered to in everyday NJCAA competition.

Another method we employ in our national tournaments and meets is not to let an individual athlete or athletes compete without proper faculty supervision. For example, in tennis, our handbook states:

> No contestant shall be permitted to enter the NJCAA Championship Tennis Tournament unless he is accompanied by a faculty member of his college, or a designated proxy coach or faculty member from another NJCAA member college as indicated in writing and certified and mailed to the Tournament Director.

This type of close supervision helps to greatly eliminate the problems we are discussing here today.

4. The NJCAA has for the past two years carried on a very active program of education among its coaches and athletes. For this program we are deeply indebted to the NCAA. All of the printed material, booklets, posters, etc., are supplied to us at no cost by the NCAA and bear our name as a sponsoring agent of the program. We recently distributed to our membership over 50,000 copies of the booklet entitled, "The Coach: Drugs, Ergogenic Aids and the Athlete."

We encourage our member institutions to display the Drug Posters in prominent places, not only in the gymnasiums but in conspicuous places throughout the campus.

Under the leadership of our 21 regional directors, we have attempted to set aside a part of every regional meeting to consider problems that fall within the scope of the Committee on Medical Aspects of Sports, and certainly the use of drugs in athletics is well within this realm.

It might be wise to point out here that no mention has been made of the term "trainer" to this point. No mention has been made of it because less than 1 percent of our member colleges employ full-time trainers. The bulk of our trainers are usually "student trainers" or the coach acts as his own trainer.

5. It is the expressed feeling of the NJCAA that the proper use of drugs in athletic competition should originate from only one source, that source being the medical doctor. To allow any one else who might be connected with out athletic programs to become involved in any form, shape, or manner in the dispensing of drugs to our athletes would border on the criminal.

The NJCAA has for years required every athlete to have a physical examination. This examination is a part of the total eligibility program each athlete must pass before he is allowed to compete in the NJCAA. We feel this mandatory examination is a step in the right direction in safeguarding our athletes.

After making this attempt to answer the questions posed by your committee, and considering our replies, it became evident that perhaps you might detect a "head in the sand" attitude.

Gentlemen, it has been only 4 years since I left my position as coach and athletic director in a metropolitan area. There, for 15 years, I never encountered a drug problem. Now, because of the very nature of our organization, I am in direct contact with our coaches and athletic directors every day and still have not found drugs to be a problem voiced by these people.

Perhaps the key difference, which has been mentioned previously, should be emphasized once more—money. Until the financing of athletics becomes a product of our program, we do not feel the pressure of competition will become great enough to precipitate the use of artificial stimulants instead of the natural stimulant provided by competitive sports.

Senator Bayh. Thank you, Mr. Killian. That was a thoughtful statement. Do you have time for some questions before that airplane?

Mr. Killian. Yes.

Senator Bayh. You indicated that you or the NJCAA have no knowledge of any use of additive drugs by athletes attending your institutions. Has the NJCAA issued a policy statement on the use of drugs or the abuse of drugs by your athletes?

Mr. Killian. As I mentioned, we were in the process of revising our code of conduct, which at that time did not contain an item pertaining to the use of drugs.

Sentor Bayh. You do have a code of conduct, but as of now it does not contain any reference to the problem of drugs?

Mr. Killian. That is right.

Senator Bayh. But you are in the process of revising it?

Mr. Killian. Yes.

Senator Bayh. Are your team coaches or physicians or trainers under any orders or is there any criteria applied to them in the event they do come across information that their athletes are abusing drugs?

Mr. Killian. Yes and no. In the statement I made in our institutions we have less than 1 percent actually employed as a full-time trainer, so that the bulk —

Senator Bayh. I mentioned coaches and athletic directors as well as physicians.

Mr. Killian. Correct. The only feedback we would get would be from the athletic director or the immediate coach, and in most of our institutions, the athletic director is the one who coaches one or more the major activities within the institution.

Senator Bayh. Well, I am not sure where the yeas and nays came in. Are they under any orders, is there any standard operating procedures as far as your coaches and team physicians are concerned in the event they come across an athlete who is using drugs?

Mr. Killian. No; not from the national office anyway.

Senator Bayh. You indicate that only drugs prescribed by physicians in the course of treatment are permitted to be used by your athletes. Do you ever conduct any testing to see if this rule is being adhered to?

Mr. Killian. No; it took us many years before we finally had the association agree to having a physical examination as part of the eligibility rules, and this has only been in effect for the past 2 years.

Senator BAYH. Would you care to venture an opinion relative to what the general reaction would be to applying spot-testing urinalysis and the sort of things that have been discussed here more recently?

Mr. KILLIAN. Senator, I believe that in our committee on medical aspects of sports, I believe we would cooperate very closely with other college organizations and the high school federation. Our actions in the future in that area depend on what the other groups do and how they go about it. I would assume that we would probably fall in line if urinalysis is the thing to do and it proves feasible, then we would probably follow in their footsteps, or right along with them. But until this point and as of this date, we have never given any thought to this type of program.

Senator BAYH. Do you have any policy relative to a physician who may prescribe steroids for athletes?

Mr. KILLIAN. No.

Senator BAYH. From a standpoint of treatment or growth acceleration, that is?

Mr. KILLIAN. Right. We assume that the physician is competent to make his own decision.

Senator BAYH. Amphetamines? Do you have the same policy with them?

Mr. KILLIAN. That would be up to the physician.

Senator BAYH. You mentioned that your Association and the junior colleges' athletics, are more low key and don't have some of the pressures that may exist in the so-called big team competition amateur athletics. I am not familiar with the overall program of junior colleges, but I am led to believe that a number of our finer athletes have reached the big time, the University of South California and so on, through the junior college system. Is that low pressure existent in those junior colleges?

Mr. KILLIAN. Senator, the 90-odd colleges that constitute the junior college system in the State of California do not belong to our organization, and therefore I can't speak for California. I do know that in the over 534—and certainly in your State you probably have one of the finest junior college basketball teams in all of America, and even though they won our national championship three times, I still consider their program to be of low key, because the bulk of our programs are sponsored by student fees or the operating budget. We are not in competition for the spectator dollar. If we were in competition for spectator dollars, we wouldn't have a program. We don't have that many junior colleges that draw well in any intercollegiate activity.

Senator BAYH. What was the impetus for the distribution of the 50,000 copies of the booklet entitled "The Coach: Drugs, Ergogenic Aids and the Athlete"?

Mr. KILLIAN. We did this as an educational program; part of our total educational program. We felt at the time that this was the right thing to do. We still believe this. As I said, the NCAA supplied these to us. We have been in the poster program for a number of years, and we distributed those to our members. We got good response to the booklet because many of our people wrote back for additional copies of the booklet so that they could distribute it to each and every athlete on the campus.

Senator Bayh. Suppose you received information from some source that there was improper distribution of drugs by a coach or a physician. What would be the reaction of your organization?

Mr. Killian. We would probably, Senator, become very alarmed and we would take the necessary steps to come up with some kind of a policy to prevent this in the future, but as of right now, we have never run into this, and I mentioned before we do not have a policy that I could state here today where we could come up with an immediate answer.

Senator Bayh. As far as sanctions and that kind of thing, you really don't have the structure to apply it?

Mr. Killian. That is right, pertaining to drugs we do not.

Senator Bayh. Do you have an across-the-board policy relative to recruitment and this sort of thing?

Mr. Killian. Yes; we do.

Senator Bayh. And the scholarship type programs and this type of thing?

Mr. Killian. Yes; we do.

Senator Bayh. But not for drug use?

Mr. Killian. No, sir, and I would think, Senator, that probably we don't because we have had over a period of years a lot more trouble with recruiting and scholarships than we have ever had with drugs.

Senator Bayh. Well, I hope that continues to be the case. Not that I am wishing you any problems in the former area, but I am also heartened that you do recognize the need to establish some sort of a policy and procedure regarding drug use. I am sure the committee will be very glad to see how you approach this problem.

Mr. Killian. Right.

Senator Bayh. Mr. Killian, I won't delay you further. I appreciate the contribution you have made. I hope you will feel free to communicate with us, and I hope we can feel free to communicate with you. And again, I apologize for the great inconvenience to which you have been subjected.

Mr. Killian. Right. Thank you, Senator.

[Mr. Killian's prepared statement is as follows:]

PREPARED STATEMENT OF GEORGE E. KILLIAN, EXECUTIVE DIRECTOR, NATIONAL JUNIOR COLLEGE ATHLETIC ASSOCIATION

Mr. Chairman and gentlemen, my name is George E. Killian, and I am the Executive Director of the National Junior College Athletic Asosciation.

With your kind indulgence, I would like to briefly familiarize you with the organization I represent. While relatively new, the NJCAA represents the fastest growing segment of education in this country—the junior colleges. For the past four or five years junior colleges (or, community colleges, as they are sometimes called) have been opening at the rate of approximately one a month. Predictions are that this rate will continue for at least another five years. Without going into the philosophy of the junior college movement, suffice it to say that it is filling a void that has long been present in our educational system. It is from our ranks that come the technicians and the para-professionals that this country so vitally needs.

The NJCAA represents more than 534 of these institutions throughout the United States, which we have divided into 21 regions for legislative purposes. It wasn't until August 1, 1969, that we opened a National Office in Hutchinson, Kansas, where we are still situated. It was at that time that I was appointed its first Executive Director. For fifteen years prior to that, I was Athletic Director and Basketball Coach at Erie Community College (formerly Erie County Technical Institute) at Buffalo, New York.

I will attempt to answer the questions that were posed to the NJCAA by Senator Bayh when he first contacted our office to arrange for my appearance here today.

1. Our organization does not consider the use of any drugs to be ethical or allowable save those prescribed by a physician in a course of treatment. Local injuries, such as sprained ankles, bruised thighs, or tennis elbow when treated with drugs by a competent physician would be considered permissible by the NJCAA. It has always been the objective of the NJCAA in its competition to pit the well athlete against the well athlete.

2. The NJCAA has no knowledge of any use of addictive or restorative drugs by athletes under its jurisdiction. This is not to imply that our athletes are 100% free of the drug problem, but merely to point out to you that this has not been a discernible problem for the NJCAA.

Gentlemen, the prime reason that this has not been apparent to any degree is because of the type of program that our member institutions are currently administering. Most of our programs are of the "dedicated" or "low key" type, rather than the "pressure" or "high key" type in which other intercollegiate organizations seem to be involved. The money necessary to run the vast majority of our athletic programs comes either directly from student fees or from the general operating budget. Our members are not caught up in the rat race for spectator dollars to finance their athletic programs.

Mr. Kermit Smith, Chairman of the NJCAA Committee on the Medical Aspects of Sports, recently reported to our office that in the countless state, regional and national meetings he has attended over the past three years in the pursuit of his duties he has never been aware of any problems with drugs as far as the NJCAA was concerned.

3. Currently the NJCAA is in the process of revising its established, "Code of Conduct for Tournaments, Contests and Events Sponsored by the National Junior College Athletic Association," so that an appropriate section pertaining to the use of drugs can be included. The NJCAA Code of Conduct is an established document that has been in use for over twenty years, and is distributed individually to every athlete who competes in any of our national tournaments or meets. Furthermore, each athletic director in his own college has the responsibility of notifying his staff and athletes that this Code of Conduct must be adhered to in everyday NJCAA competition.

Another method we employ in our national tournaments and meets is not to let an individual athlete or athletes compete without proper faculty supervision. For example, in tennis, our handbook states: "No contestant shall be permitted to enter the NJCAA Championship Tennis Tournament unless he is accompanied by a faculty member of his college, or a designated proxy coach or faculty member from another NJCAA member college, as indicated in writing and certified and mailed to the Tournament Director." This type of close supervision helps to greatly eliminate the problems we are discussing here today.

4. The NJCAA has for the past two years carried on a very active program of education among its coaches and athletes. For this program we are deeply indebted to the NCAA. All of the printed material, booklets, posters, etc. are supplied to us at no cost by the NCAA, and bear our name as a sponsoring agent of the program. We recently distributed to our membership over 50,000 copies of the booklet entitled, "The Coach, Drugs, Ergogenic Aids and the Athlete."

We encourage our member institutions to display the Drug Posters in prominent places, not only in the gymnasiums but in conspicuous places throughout the campus.

Under the leadership of our twenty-one regional directors we have attempted to set aside a part of every regional meeting to consider problems that fall within the scope of the Committee on the National Aspects of Sports, and certainly the use of drugs in athletics is well within this realm.

It might be wise to point out here that no mention has been made of the term "trainer" to this point. No mention has been made of it because less than 1% of our member colleges employ full-time trainers. The bulk of our trainers are usually "student trainers," or the coach acts as his own trainer.

5. It is the expressed feelings of the NJCAA that the proper use of drugs in athletic competition should originate from only one source, that source being the medical doctor. To allow any one else who might be connected with our athletic programs to become involved in any form, shape, or manner in the dispensing of drugs to our athletes would border on the criminal.

The NJCAA has for years required every athlete to have a physical examination. This examination is a part of the total eligibility program each athlete must pass before he is allowed to compete in the NJCAA. We feel this mandatory examination is a step in the right direction in safeguarding our athletes.

After making this attempt to answer the questions posed by your committee, and considering our replies, it became evident that perhaps you might detect a "head in the sand" attitude.

Gentlemen, it has been only four years since I left my position as coach and athletic director in a metropolitan area. There, for fifteen years, I never encountered a drug problem. Now, because of the very nature of our organization, I am in direct contact with our coaches and athletic directors every day and still have not found drugs to be a problem voiced by these people.

Perhaps the key difference, which has been mentioned previously, should be emphasized once more—money. Until the financing of athletics becomes a product of our program, we do not feel the pressure of competition will become great enough to precipitate the use of artificial stimulants instead of the natural stimulant provided by competitive sports.

Senator BAYH. Thank you.

Our next witness is Mr. Harold Connolly, former Olympic champion, and four-time Olympian, track and field coach and English teacher at Santa Monica School, California.

We appreciate your coming and again, it is a long way from California to have to come and sit and wait. I apologize for the delay.

STATEMENT OF HAROLD CONNOLLY, FORMER OLYMPIC CHAMPION—FOUR-TIME OLYMPIAN: TRACK AND FIELD COACH AND ENGLISH TEACHER AT SANTA MONICA HIGH SCHOOL, CALIFORNIA

Mr. CONNOLLY. On July 9, 1972, I weighed 250 pounds. Today I weigh 203. The difference in body weight, I am sure, is due in considerable measure to the fact that I stopped taking anabolic steroids. From July 10, 1972, the day after the Olympic tryouts in the hammer throw, I have not taken any drugs whatsoever, but for the 8 years prior to that, I would have to refer to myself as a hooked athlete. Like nearly all of my competitors, I was using anabolic steroids as an integral part of my training for the hammer throw.

Over the years I tried every variety of anabolic steroid available in the United States. In recent years I even tried European varieties of steroids which were brought back by fellow American athletes thinking that the Europeans might have something better than we had. I was administered these drugs and given prescriptions for them by American physicians and by doctors in Finland, where I taught for 2 years, 1962 to 1964, on a Fulbright grant. During this whole steroid drug experience, no one seemed to quite know what he was doing. The doctors varied their recommended dosages, and nearly always the dosages I took exceeded what the doctors recommended because my fellow athletes kept insisting I was taking far too little. I never had any noticeable side effects except perhaps on a few occasions an excessive retention of water. I was convinced they made me stronger and heavier.

Just prior to the 1964 Olympic games in Tokyo all around me it seemed that more and more athletes were using steroids for athletic preparation, and one began to feel that he was placing himself in a decided disadvantage if he did not also get on the sports medicine bandwagon. I first became exposed to the use of drugs as a means to improve athletic performance at the 1960 Olympic games in Rome. I heard from some American weight lifters that the Russians were using some bodybuilding drug which increased their muscular proportion and their strength. When I came home, I asked a physician I knew what it might be, and after a little research, he told me that the only thing he could find that would fit the description were anabolic steroids. For a 4-week period I tried, under the doctor's direction, the steroid Dianabol. I had no noticeable changes in body weight or strength and I very quickly abandoned its use. I didn't use these drugs again until 1964 for the Tokyo Olympic games.

The big question which remains in my mind is how much in actuality did the taking of these drugs improve my performance in the hammer throw? To be sure, using them I gained weight and strength. The difference between my world record while on drugs (233 ft., 9½ inches) and my world record while completely free of drugs (231 ft., 2½ inches) was only 2 ft., 7 inches better, certainly not a significant difference.

The first time I became aware that amphetamine stimulants were also being used to increase athletic performance was likewise at the 1960 Olympic games. A teammate from another weight-throwing event with whom I was rooming tried to convince me to use the same dosage of amphetamine he used before each competition. Since I never had tried these drugs, and didn't want to risk any unusual responses, I declined. After the competition in which I did rather poorly, a German athlete friend of mine in the same event remarked that I had looked lethargic and he asked me if I had taken anything to get excited. When I told him I hadn't he was amazed and told me I was a fool.

The following year I experimented on myself with the use of amphetamines for competition and found that they did me much more harm than good. They caused me to become hyperexcited and lose control of my coordination. For my particular metabolism and mental makeup, they were of absolutely no help, and I ceased using them. I noticed, however, how many other athletes in my event and other events were using amphetamines, and I was amazed.

In 1972, as I looked around I realized the world of international track and field had undergone fundamental changes since my first Olympic experience in 1956. I am sure that in the Melbourne Olympic games very few athletes used drugs to increase performance. There were certainly no anabolic steroids being used to my knowledge. By 1960 and 1964, it was mainly the weightmen and weight lifters who were using the steroids. But by 1968, athletes in every event were using anabolic steroids and stimulants. The use of marihuana by a number of athletes also became a favorite method of relaxing after a hard workout or competition. Tranquilizers also came into wide use as a means of coming down from an amphetamine high. Perhaps because I dislike any form of smoking so much, I never had the slightest interest in marihuana. Moreover, I am also averse to the use of marihuana or alcohol because I feel they impair judgment.

The so-called restorative drugs which I had never heard of before the 1964 games started to come into wide use. Enzymes, muscle relaxants, and anti-inflammatory drugs were being widely used. Many athletes I knew strongly relied on the use of anti-inflammatory drugs after very strenuous weight training sessions to reduce the soreness they would ordinarily feel the next day. Drugs were frequently used in combinations. One world record holder I knew would combine methamphetamine or Ritalin and Darvon. The amphetamine to get him up and the Darvon to reduce all skeletal pain and to keep him from being too agitated by the amphetamine. These drugs were used both for training and for competitions. It was not unusual in 1968 to see athletes with their own medicine kits, practically doctor's bags, in which they would have syringes and all their various drugs.

I recall one incident in 1964 which clearly points out the level of awareness and concern of the medical staff which was assigned to look after the Olympic athletes in Tokyo. A roommate of mine had brought with him his drugs, the most potent had to be refrigerated. It consisted of a mixture of an anabolic steroid and straight testosterone in a large vial which was to last him through the period of the games. He had a note from his doctor with instructions that he be given injections of this concoction twice a week. He boldly presented it to the medical staff of the team, they placed the drug in their refrigerator and the team nurse gave him the injections right on a schedule, twice a week. In 1964, I don't believe the use of anabolic steroids had been declared an illegal drug by the IOC. However, our Olympic medical staff were really not very concerned with what he was receiving.

In 1968 in the training camps prior to the Mexican trial games, the situation had reached the state of openness where athletes in various events were obligingly injecting each other with their various vitamin B12, liver and steroid shots. I knew any number of athletes on the 1968 Olympic team who had so much scar tissue and so many puncture holes in their backsides that it was difficult to find a fresh spot to give them a new shot. I relate these incidents to emphasize my contention that the overwhelming majority of the international track and field athletes I have known would take anything and do anything short of killing themselves to improve their athletic performance.

I would like to mention here some words about the use of drugs by women in track and field. I think it must be all the more frustrating and discouraging for a young lady to rise in athletic achievement, climb to the heights, only to find at the top that so many of her competitors are using drugs to give themselves an unfair advantage in competition. One of the primary reasons why the United States does not have among its girls a world class discus thrower or shotputter is the fact that their competitors abroad are using anabolic steroids to give them that extra male power which they utilize so well in their events. You must keep in mind that a great number of European countries have highly sophisticated sports medical programs where the use of drugs by their athletes is very carefully supervised. This is particularly true in the case of the women from the Eastern European countries. I know that our American girls are just beginning to take steroids to compete with their sisters from Europe. This is an unfortunate situation but all the more important is that they do not have the careful medical supervision in their use of drugs as do the European girls.

Women using these drugs run much greater risks than men, and therefore, their use becomes a very dangerous practice. An interruption or total cessation of the menstrual cycle, the growth of excessive facial and body hair, and the onset of personality changes sometimes occur when taking steroids. After the athletic season and the removal of the steroids and the application of estrogenic hormones is supposed to reverse the unwanted side effects. There is a possibility of irreversible side effects.

At this point one might ask the question: if these drugs are being so widely used by international athletes, are college and high school athletes turning to them as well? A few years ago, a friend of mine who threw the javelin and was a place kicker on a leading California university football team told me that every 2 weeks the entire team lined up, pulled down their pants, and were given their shot by the doctor. My friend was certain from his track and field experience that they were receiving anabolic steroids, but his teammates had no idea what the shots were. Just the other day a high school football coach told me that one of the leading southern California high school teams has a player that supplies amphetamines to all his teammates before every game. The coaches are aware of what's going on but they steer clear of this situation.

The 2 years I was coaching high school track and field in 1964 to 1967, I knew from the remarks of their teammates that 2 of my athletes on a team of 110 were using amphetamines during competition. I never could catch them actually taking the drugs, but I strongly warned them against the risks they were running if they were acting so foolishly. They simply smiled and continued to get high. I am sure the incidence of drug use to improve athletic performance has grown considerably among high school athletes since 1967. And other drugs which were not even mentioned in 1967 by high schoolers are now much more prevalent. Just last fall I was told by some high school football players that a teammate of theirs was going to give it a try in a game with mescaline. This would have been unheard of in 1967.

The International Olympic Committee has set down a series of strict regulations in respect to the use of drugs in Olympic competition. The International Amateur Athletic Federation, the governing body for track and field, has also established strict rules in respect to drug usage in competition. Both organizations have published an extensive list of prohibited drugs. Where a man is suspected of having taken a stimulant, urine tests are given, and should they prove positive, he would be banned from competition. In respect to the use of steroids the regulations against them are practically unenforceable because the drug is so difficult to detect and the test is so elaborate. The California Interscholastic Federation, the governing body for high school athletics in southern California, has no specific rules against the use of drugs in sports but leaves it to their member schools to establish the regulations for its athletes.

Rules regarding the use of drugs have been passed by sports organizations and schools and undoubtedly new regulations will follow. The July 17, 1969, issue of Sports Illustrated expounded that sports is:

> . . . designed to focus attention on the participants; to measure their weakness, virtues, strengths, speed, agility, stamina, intelligence, instincts, resistance to pain and pressure, and their self control. The mystery and drama of sports for both participants and spectators has always been the unfolding action that occurs when men match these intangible elements of their characters.

From my personal experience as an athlete, I believe there is even more to the mystery of sport. The traditionally accepted moral and philosophical concepts regarding competition or competitive sports are being openly challenged by man's instinctive desire to ascend to untrodden levels of human accomplishment using any road which may get him to his goal.

The code of conduct among athletes in respect to adhering to the extrinsic rules, by that I mean the on-the-field regulations governing the competition, is among the most exemplary in the world. Would that more of our political, military, and industrial leaders exercised the same ethical consciousness. The intrinsic rules, however, are a different matter. I think most adult athletes feel what they do to their bodies is their business. What they eat and drink, what vitamins they take, and what drugs they use to improve their athletic performance should be left to them. They feel any other athlete in today's world can seek out or be provided with similar scientific resources.

From a practical point of view, it is impossible to equalize athletic opportunity for all the athletes from every nation in respect to food, equipment, facilities, financial subsidy, geographic locations, social systems or the accessibility of scientific knowledge and modern pharmacology. Regulations against so-called "unfair athletic advantage" as altruistic and they may seem, have failed.

Thus, far the most effective means to achieve the most balanced advantage for athletes from diverse nations has been the situation that has naturally evolved notwithstanding the strictures. That is: each separate nation provides all the best it possibly can for its own promising athletes, everything from education and jobs to sports medicine.

But what of the possible dangers associated with using drugs in sports, particularly for youth? Because so many young athletes continue to use these potentially dangerous drugs, even faced with the possibility of loss of reputation and expulsion from their sport, we must confront the problem honestly. We know too little about the actual effects of many chemical substances used by athletes. If we accept the reality of how many youngsters are indiscriminately using drugs for sports, I believe we have the obligation to ascertain the information which will help protect their physical and mental health.

Of course, the righteous will say, "Those who violate the rules must face all the consequences." I consider this an abrogation of responsibility. If we simply say the use of such and such a drug is prohibited in sports, we make it impossible to do what is most necessary—extensive research involving hundreds of competing athletes, and it must be immediately begun.

The Amateur Sports Act of 1973, which I pray is enacted into law, can provide the authority and means to initiate truly meaningful research into sports medicine, the kind that I know is being done in Eastern Europe. But we need not cheat on the international rules. The Amateur Sports Board could, I believe, secure a temporary dispensation from the drug rules for hundreds of volunteer American athletes in various Olympic sports to participate in blind tests of the actual effects of various restorative and addictive drugs on athletes. The honest and factual information that could be derived from this type of approach would do far more to stem the severe dangers to our young athletes we now face under our present procedures.

Present and future information on the effects and dangers of using drugs in sports must be honestly presented to our high school and college athletes. It is not sufficient to have an NCAA newsletter with an unconvincing drug warning to coaches and athletes or some other occasional periodical articles on drugs in sports lying in coaches desks or hanging from the bulletin boards. Informative and authoritative films on the subject must be produced for high school athletes. Symposia with experts and prominent athletes must be presented in our schools to inform our youngsters. The best of these meetings could be filmed, edited, and made available throughout the Nation on educational television or directly to schools.

I have requested the school board where I teach to allow me to work with them to begin next fall a program dealing with the use of drugs in sports. I hope Santa Monica, Calif., will lead the way for other communities to do the same.

As I look back at the 8 years I experimented on myself, I feel fortunate that the cautious doses I took did not result in the painful, debilitating side effects a number of athletes I knew experienced from overdosing on sports medicine. I was lucky, but what of today's youngsters with the peer group pressures, the greater prevalence and availability of all manner of drugs, and the increased demands of athletic competition?

It is clear to me that sports organizations must retain and more efficiently implement restrictions on all drugs which pose a potentially serious threat to health. As ineffective as this deterrent may be, it protects some athletes. I also believe, because of their enormous influence over hundreds of thousands of American youngsters, our professional athletes should be compelled to conform to strictly enforced drug rules particularly in regard to the use of amphetamines. This single step would do more in a very short time to reduce the use of amphetamines by high school athletes than anything else I can think of.

Over the long haul, however, the tide of indiscriminate use of drugs in sports can only be turned by a thorough nationwide educational program based on extensive research. Soon my two sons will be entering high school athletics. I want them and all other youngsters to be adequately informed and warned about the use and misuse of drugs in sports and I intend to do everything I can to achieve that objective.

Senator **Bayh.** Thank you, Mr. Connolly. It is a privilege for the committee that you, as an Olympic champion, would take the time to let us have your first-hand experience.

Could you tell us a little bit more about how you initially became involved with these drugs? You paint a rather frightening picture here of experimentation and rumor and resort to trial and error in an effort to achieve excellence in the United States as contrasted with a calculated and scientific approach in some of the other countries. Could you give us a little more insight as to how one athlete started using drugs?

Mr. **Connolly.** Athletes are a very tight fraternity of individuals particularly in associated events like weight throwers or sprinters or middle distance runners, and sooner or later they communicate with each other about their training. And they will here talk of other athletes using certain substances that are supposed to enhance their ability. When I began, it was things like vitamin B and wheat germ oil and proteins. Then along comes someone and says, try this, and he holds out a little pill and, as I tried to indicate, most athletes that I have known on the top levels are so involved about proving excellence for one reason or another, whether it is a personal challenge or a quest for the clamor and fame of victory, they are interested enough to try it. They will want to be assured that they will not drop dead from it, of course, but they will try it even though there is some warning about side effects.

That is pretty much how is begins, but their motives are different from the other population of youngsters who may be trying drugs for other reasons. It is a very isolated thing, this use of drugs in sports; it is for the specific reason of improving performance and therefore it is narrow enough in its scope that it can be looked at for its results rather than looking at the general drug problem among high school students and the general population.

Senator **Bayh.** Apparently there are some doctors that are administering this drug. You cited one example.

Mr. **Connolly.** There are no Federal, as far as I know, prohibitions, on a doctor administering steroids or amphetamines with prescription under his control and care and I have known some doctors that get sort of a kick out of playing with the athletes and seeing how much they can bring his performance around. It is a bit of a game for them. You take a healthy, strapping individual who is doing very well in sports, and the doctors will administer these substances to him and just see what the results will be and with the breadth of drugs that are available in pharmacology, they can be used for any number of the athletic associated situations.

Senator **Bayh.** Apparently the experience you had with steroids initially with normal dosages was nothing; is that correct?

Mr. **Connolly.** That is right. Taking the dosage that was indicated on the bottle resulted in nothing happening.

Senator **Bayh.** Would you care to tell us—we would like it for our record—just how large a dosage you took ultimately?

Mr. CONNOLLY. I never went as far as what I know athletes are taking now. I was always a little reluctant, and maybe I thought too much about the possible side effects and then of course you begin to imagine you are feeling them, so you cut down on the dosages. I guess I didn't have the courage some of the athletes have today, but the dosages that have been used are 8 and 10 times what is recommended by the pharmaceutical companies.

Senator BAYH. Eight and ten times?

Mr. CONNOLLY. Right.

Senator BAYH. Do these athletes who take that kind of dosage have side effects?

Mr. CONNOLLY. I think some do, but most don't because the doctors, most doctors, are too frightened of the possible consequences. The doctors who do work with the athletes who take these massive dosages monitor them carefully with liver function tests when there begins to appear some deviation that is alarming, they take them off the drug and apparently the side effects are fairly quickly reversible with that drug.

Senator BAYH. You mentioned at the outset of your testimony you are presently weighing 203 pounds?

Mr. CONNOLLY. That is right.

Senator BAYH. That is a pretty good sized man, I would say, and when you were competing in 1972, you weighed 250.

Mr. CONNOLLY. That is right, sir.

Senator BAYH. You have lost 47 pounds during the period you have come off steroids?

Mr. CONNOLLY. That is right.

Senator BAYH. How much did you weigh when you set that record? You mentioned the two records. I don't remember the specific dates, but there were two.

Mr. CONNOLLY. About 253 pounds, but the dilemma for me is that I don't have any question in my mind that it increases strength, sheer strength and body mass, but from my personal reaction to those drugs, I think it inhibited me in other ways like body flexibility. I felt retention of fluid in my joints, and perhaps the advantage in greater strength and weight was counterbalanced by the loss of flexibility and the loss of mobility in my knees and so forth. And that is why I feel research has to be done because maybe if I had never taken them at all, I would have achieved the same results. I might not have been as heavy—I certainly wouldn't have been—or as strong, but I might have even performed better in my particular event.

Senator BAYH. You mentioned that when you set the world record of 233 feet, 9½ inches, that you had been using anabolic steroids, and when you set the previous record of 231 feet, 2½ inches, you hadn't been?

Mr. CONNOLLY. That is right, and when I wasn't using the drugs and I broke the world record, I weighed about 227 pounds, and when I broke it the next time,—I don't think with a very significant improvement in performance—I weighed 253 pounds.

Senator BAYH. During that period prior to your first record, you had not used drugs?

Mr. CONNOLLY. No.

Senator BAYH. And during the period between the first record and the second, you had, and you put on about 25 pounds?

Mr. CONNOLLY. That is correct.

Senator BAYH. Over what period of time does a normal athlete take these anabolic steroids—approximately?

Mr. CONNOLLY. The rule of thumb now is you take them for 3 months, and then you go off for 2 weeks to a month, and then go back on them, but I have known athletes that have been on them continuously for 2 or 3 years.

Senator BAYH. Does this have any mental effect or psychiatric effect?

Mr. CONNOLLY. I didn't notice in my own case, but the person who is taking drugs never notices his own changes. I don't think they do, because I didn't feel any psychological changes or any apprehensions or any agitation or anything like that, but I have noticed in other athletes who use all manner of drugs, including steroids, but particularly amphetamines in large doses, that there appears to me to be personality changes.

Those are the guys who use them in training and in competition, and the tolerance of the drug grows so that they would take a dose of such magnitude, that if I were to take it, I would be right up on that ceiling. They have to take that much to get the jolt from it, and that I think is very dangerous.

Senator BAYH. When you suggested that you found no benefits from amphetamines——

Mr. CONNOLLY. No, sir.

Senator BAYH. Was this because of psychological negative reaction you had, or just because there was no physical effects?

Mr. CONNOLLY. There probably were a number of reasons. One, I didn't like the feeling afterwards. I didn't like the withdrawal, or whatever it was; the headaches the next day. I didn't like being awake in bed until 3 in the morning unable to sleep and I didn't want to have to resort to barbituates or tranquilizers or alcohol to put me to sleep. The whole thing was repugnant to me.

As far as improving my athletic performance, I was erratic when I took amphetamines, but other athletes have used them in practice and gotten used to them. I didn't want to go that far, but others have gone that far.

Senator BAYH. What is the general dosage of amphetamines?

Mr. CONNOLLY. It really depends on the particular drug you take but somewhere between 10 and 20 milligrams, but when you develop a tolerance to it, through using it in training, you got up to 40 and 50 milligrams.

Senator BAYH. In your experience, have you known any athletes that have become dependent on amphetamines?

Mr. CONNOLLY. Yes, psychologically in that they couldn't possibly face a major competition without them. To that extent, they were addicted.

Senator BAYH. What about physically?

Mr. CONNOLLY. I am not a medical man, so I couldn't determine that. I only can say how they felt, that was that they just couldn't face a major competition because when we had the Olympic tryouts in Eugene, Oreg., last July and they knew every man was going to go through urine tests, many of these athletes I knew were not about to risk taking the amphetamines, and they were in serious trouble. They had to go through a period of withdrawal or whatever; maybe psychological withdrawal, and they had to find other substitutes to substitute that they felt wouldn't be detectable. Strong caffeine type things was what they used. They just couldn't go in these without taking something, and they risked detection. They reckoned that if they are going to test them and they found caffeine, well, I can say I had a cup of coffee, but they were taking caffeine dosages that were very high.

Senator BAYH. Now, so far we have talked about champion athletic competition both national and international. What of the situation in and around Santa Monica, the colleges, the universities, the high schools there, where we are not talking about world champion events?

Mr. CONNOLLY. It is difficult to ascertain because you can talk to coaches and they will say we don't have any discernible problem, but how can they really tell unless they have direct information from some former member of a team they coached, or some present member? They can't really know. You can't distinguish between the natural excitement of a team after a game—the hyperactivity they demonstrate and so on—from a person who is on amphetamines. I know that high school athletes use these things, Senator. You could run perhaps some surveys, but I think that it is a waste of time because I assume they are and I know there are high school athletes using steroids and we all know in track and field of numerous high school athletes, particularly weight men, who use steroids to achieve the improved results that they appear to be achieving.

And I think that now that the youngsters are going to learn that their pro idols are using amphetamines to get through the NBA or the baseball season, they begin to think well, if they can take it, I can take it; I mean, whatever they can do, I will do because, Senator, they idolize these men so much that they will feel no restrictions in their own minds about using these kinds of things for their own championship games.

But this is all so unscientific. We don't really know for sure what these drugs do and we don't really know what the side effects are. I read Dr. Hanley's testimony to this committee and he doesn't really know if the so-called addictive drugs do contribute to improved performance or they don't. They only have a number of different tests that have been run, which are inconclusive.

Senator BAYH. In your testimony you suggest that we ought to test for drugs?

Mr. CONNOLLY. I am sure of it. I am sure of it. We may open a Pandora's box in a way because it is possible we may find that they do enhance athletic performance, particularly steroids, but at least we will know what the dangerous dosages are, or we may find that they in fact don't. Because I don't really know whether they do or don't, but most athletes are convinced they do, and I was convinced enough that they did something that I took them for 8 years. It is only in retrospect now that I am beginning to question it, but the fellows that are into it today are taking them in heavy dosages and they think they work and they may injure themselves dangerously, especially women.

Senator BAYH. Is testing a better policy than abstinence?

Mr. CONNOLLY. Excuse me?

Senator BAYH. Abstinence, a prohibition?

Mr. CONNOLLY. You can say that, you can say don't take it, and you can bring up the moral issue, but it hasn't worked. They do take it, and those are the realities. You can frighten people by doing spot checks and you can cut down the incidence, and that should be done, but at the same time, for the sake of those that will take it, I think we have an obligation to find out what is happening with the human organism when we are taking these substances. I mean, we say to people, don't smoke, but they keep smoking. We say don't drink alcohol, but they keep drinking alcohol. We are doing intensive research into those areas to let people know what they may do to themselves, but there is no intensive research in this country about what these drugs may do to young men and women in sports; no really effective research.

Senator BAYH. How do you conduct research since you admit there may be some significant side effects? How do you draw a sample?

Mr. CONNOLLY. That is the problem. You either cheat, the way some countries are doing, or, you give athletes the drugs without telling them whether they were actually taking these drugs or they were taking placebos, and you find out. You find out that way.

Senator BAYH. You say that prohibition, abstinence, hasn't worked. Now, only in certain kinds of competition have we really even sought to examine for the use of drugs.

Mr. CONNOLLY. That is right.

Senator BAYH. Without getting moralistic about it, but as someone who has competed yourself, is it a fair assessment that if we really wanted to test sufficiently, we could test everybody? Is that a fair statement?

Mr. CONNOLLY. From what I have read, I understand the tests are somewhat difficult to run. They take so long and are so expensive that they are not being administered anyway. They do spot testing instead of testing everybody and they test them in some championship competitions but not in all competitions. You can't do it in all competitions.

I believe that until we know more about what they actually do, these drugs, we have to have prohibitions, and we have to test and we have to try to protect people from hurting themselves in sports.

Senator BAYH. What is the policy at Santa Monica high school relative to the use of drugs and the effort to try to ascertain what the young men or women are using?

Mr. CONNOLLY. There is no way they can determine if a young man is actually using them unless he is seen physically doing it by the coach, and then he would be suspended from the team. That applies to smoking as well, or the use of alcohol and the use of these drugs which are prohibited by organizations like the IOC and the IAA; if they know the athlete is using these drugs and can catch him at it and prove it, they suspend him from the team, but that is very difficult to do. They don't run any unrinalysis as far as I know in any high school competitions.

But it seems that the idols of these athletes are ones to work on more than on these kids, at least as far as testing right now.

Senator BAYH. I think you are a unique specimen; and an exceptional witness, as far as being able to testify on both sides of this coin. Here is a man who held the world's record without taking drugs, and who holds the world record using drugs. You are a champion.

Is being the best in the field as a human being enough? Is that what we are trying to accomplish athletically, or must we artificially through medical stimulation increase the capacity percent in order to really accomplish our goals? You know, what should our goal be? Where do the moral and ethical concerns fit into the picture?

Mr. CONNOLLY. That is really a most difficult question to answer and it is something that is within yourself. When I look at mankind I believe all men in a spiritual sense are equal, but in a physiological sense, men are not equal. We are all the same in that spiritual quality that makes us men, whether we are 6 foot 6 or whether we are black or whether we are white, or whether we are crippled or whether we are deaf, and we will accept the fact that we are all equally men, but when you start striving for some sort of physical accomplishment, we are not equal. There will always be someone a little bigger, a little stronger, and I know that very well because I was born and had a birth injury and I went through a whole athletic career with a disadvantage with a left arm that was 3 inches shorter than my right. And I wanted to be the best in what I did, and fortunately I was able to do it with my so-called natural qualities without any outside assistance from any substances or whatever, but when the time came that I felt I was going to relinquish that position that I held within my own mind as being the best in the world, to someone who is using something that I had access to and that I could use too, I used it. So there is something that drives a man to certain levels of accomplishment, certain heights, and as long as what he is doing to himself is not injuring his fellow man, he will do it, and I did it, but when I felt that I might destroy myself with amphetamines, I couldn't do it, but I found no mental restrictions on my part in using steroids.

Senator BAYH. Unfortunately I can't look at this solely from the standpoint of an Olympic champion—I have to try to look at this from the perspective of national policy and it is awfully difficult. None of us can really pass a moral judgment on others. We all ought to play by the same set of rules. It seems to me to be unfair to say the Russians can do something and the Americans can't. That I understand, but I am asking a more basic question. What should the rules be? In fairness, we ought to all play with the same set of rules. But in order to satisfy mankind's quest for excellence, is it necessary that the human machine be revved up with all of the modern additives, or should the goal be that we satisfy our quest for excellence by saying, we are going to use what God has given us?

Mr. CONNOLLY. I don't think we can do that. I don't think we do that now, or did it even before drugs. It may be a little simplistic, but we don't come into this world with anywhere near equal machines. Someone whose vision is a little defective will need glasses. Someone whose ankles are a little weak, he will need tape on his legs. And it just goes on and on. You find something else that will bring you up a little closer to the next guy. Someone may naturally produce more male hormones and so you find he has an advantage over you—his muscles are bigger, stronger—and if you find something to bring you up to his level, you take it, the same as another athlete might wear glasses in order to see the finish line.

It is a very difficult question to answer. I am more concerned about the damage that can be done by indiscriminate application of these things. I mean, by putting on the wrong lenses, you could ruin your eyes for life but we have scientific men who have done research and are not going to let you do that to your eyes, but here we are taking drugs to enhance our physical abilities in sports, that could damage us and we have no research. So I am very concerned about that.

I am not condoning it, because it is a question that needs much further investigation, but I am not convinced that they actually do all that they are purported to do, anyway, Senator. Dr. Hanley may be right and research may prove that the detriment in taking these drugs is far greater than the benefits, but we don't know that yet, and at this time the youngsters are convinced the benefits outweigh the risks.

Senator BAYH. You mentioned that you had no noticeable side effects yourself. Have you in your association with some of your competitors, your friends, become familiar with any side effects that we should know about?

Mr. CONNOLLY. I haven't seen any of the dramatic side effects they tried to scare us with, but I have heard, after talking with a few athletes who used them, their skin may break out or they may have painful joints, which perhaps are a result of a high percentage of uric acid in the system, which these steroids can cause, but I haven't seen any. One athlete told me—and this is just a humorous anecdote to point out the psychology of athletes—he said, maybe when I am 45 years old, my wife will turn to me while we are watching television some night and I will shrivel up to a raisin and fall on the floor, but I don't care. You see, Senator, he wanted that record, and this is what you are dealing with.

But I can't sit here and enumerate a list of cases where people really felt they were damaged by taking anabolic steroids.

The ones that take amphetamines, I personally feel they are hurting themselves gravely, but they keep doing it; professional and amateur athletes alike.

Senator BAYH. Well, you have been very kind and made a significant first-hand contribution to our record. I appreciate what you had to say. I want to apologize again for the significant inconvenience to which you have been subjected. I thank you very much for helping us.

Mr. CONNOLLY. It has been a pleasure to be here. Thank you, Senator.

[Mr. Connolly's prepared statement is as follows:]

PREPARED STATEMENT OF HAROLD CONNOLLY

On July 9, 1972 I weighed 250 lbs. Today I weigh 203. The difference in body weight, I am sure, is due in considerable measure to the fact that I stopped taking anabolic steroids. From July 10, 1972, the day after the Olympic tryouts in the Hammer Throw, I have not taken any drugs whatsoever, but for the eight years prior to that I would have to refer to myself as a hooked athlete. Like nearly all of my competitors I was using anabolic steroids as an integral part of my training in the Hammer Throw.

Over the years I tried every variety of anabolic steroid available in the United States. In recent years I even tried European varieties of steroids which were brought back by fellow American athletes thinking that the Europeans might have something better than we had. I was administered these drugs and given prescriptions for them by American physicians and by doctors in Finland, where I taught for two years, 1962 to 1964, on a Fullbright grant. During this whole steroid drug experience no one seemed to quite know what he was doing. The doctors varied in their recommended dosages, and nearly always the dosages I took exceeded what the doctors recommended because fellow athletes kept insisting I was taking far too little. I never had any noticeable side effects except perhaps on a few occasions an excessive retention of water. I was convinced they made me stronger and heavier.

Just prior to the 1964 Olympic Games in Tokyo all around me it seemed that more and more athletes were using steroids for athletic preparation, and one began to feel that he was placing himself in a decided disadvantage if he did not also get on the sports medicine bandwagon. I first became exposed to the use of drugs as a means to improve athletic performance at the 1960 Olympic Games in Rome. I heard from some American weight lifters that the Russians were using some body-building drug which increased their muscular proportions and their strength. When I came home I asked a physician I knew what it might be, and after a little research he told me that the only thing he could find that would fit the description were anabolic steroids. For an 8-week period I tried, under the doctor's direction, the steriod Dianabol. I had no noticeable changes in body weight or strength and I very quickly abandoned its use. I didn't use these drugs again until 1964 for the Tokyo Olympic Games.

The big question which remains in my mind is how much in actuality did the taking of these drugs improve my performance in the Hammer Throw? To be sure, using them I gained weight and strength. The difference between my world record while on drugs (233 ft., 9½ inches) and my world record while completely free of drugs (231 ft., 2½ inches) was only 2 ft., 7 ins. better, certainly not a significant difference.

The first time I became aware that amphetamine stimulants were also being used to increase athletic performance was likewise at the 1960 Olympic Games. A teammate from another weight throwing event with whom I was rooming tried to convince me to use the same dosage of amphetamine he used before each competition. Since I had never tried these drugs before, and didn't want to risk any unusual responses, I declined. After the competition in which I did rather poorly a German athlete friend of mine in the same event remarked that I had looked lethargic and he asked me if I had taken anything to get excited. When I told him I hadn't he was amazed and told me I was a fool.

The following year I experimented on myself with the use of amphetamines for competition and found that they did me much more harm than good. They caused me to become hyperexcited and lose control of my coordination. For my particular metabolism and mental makeup, they were of absolutely no help and I ceased using them. I noticed however how many other athletes in my event and other events were using amphetamines and I was amazed.

In 1972, as I looked around I realized the world of international track and field had undergone fundamental changes since my first Olympic experience in 1956. I am sure that in the Melbourne Olympic Games very few athletes used drugs to increase performance. There were certainly no anabolic steroids being used to my knowledge. By 1960 and 1964 it was mainly the weight men, the weight lifters, who were using the steroids. But by 1968, athletes in every event were using anabolic steroids and stimulants. The use of marijuana by a number of athletes also became a favorite method of relaxing after a hard workout or competition. Tranquilizers also came into wide use as a means of coming down from an amphetamine high. Perhaps because I dislike any form of smoking so much, I never had the slightest interest in marijuana. Moreover, I am also averse to the use of marijuana or alcohol because I feel they impair judgment.

The so-called restorative drugs which I had never heard of before the 1964 Games started to come into wide use. Enzymes, muscle relaxants, and antiinflammatory drugs were being widely used. Many athletes I knew strongly relied on the use of antiinflammatory drugs after very strenuous weight training sessions to reduce the soreness they would ordinarily feel the next day. Drugs were frequently used in combinations. One world record holder I knew would combine methamphetamine or Ritalin and Darvon. The amphetamine to get him up and the Darvon to reduce all skeletal pain and to keep him from becoming too agitated by the amphetamine. These drugs were used both for training and for competitions. It was not unusual in 1968 to see athletes with their own medicine kits, practically doctors' bags, in which they would have syringes and all their various drugs.

I recall one incident in 1964 which clearly points out the level of awareness and concern of the medical staff which was assigned to look after the Olympic athletes in Tokyo. A roommate of mine had brought with him his drugs, the most potent had to be refrigerated. It consisted of a mixture of an anabolic steroid and straight testosterone in a large vial which was to last him through the period of the games. He had a note from his doctor with instructions that he be given injections of this concoction twice a week. He boldly presented it to the medical staff of the team, they placed the drug in their refrigerator and the team nurse gave him the injections right on schedule, twice a week. In 1964 I don't believe the use of anabolic steroids had been declared an illegal drug by the IOC. However, our Olympic Medical Staff were really not very concerned with what he was receiving.

By 1968 in the training camp prior to the Mexican trial games, the situation had reached the state of openness where athletes in various events were obligingly injecting each other with their various vitamin B12, liver and steroid shots. I knew any number of athletes on the 1968 Olympic team who had so much scar tissue and so many puncture holes in their backsides that it was difficult to find a fresh spot to give them a new shot. I relate these incidents to emphasize my contention that the overwhelming majority of the international track and field athletes I have known would take anything and do anything short of killing themselves to improve their athletic performance.

I would like to mention here some words about the use of drugs by women in track and field. I think it must be all the more discouraging for a young lady to rise in athletic achievement, climb to the heights, only to find at the top that so many of her competitors are using drugs to give themselves an unfair advantage in competition. One of the primary reasons why the United States does not have among its girls a world class discus thrower or shotputter is the fact that their competitors abroad are using anabolic steroids to give them that extra male power which they utilize so well in their events. You must keep in mind that a great number of European countries have highly sophisticated sports medical programs where the use of drugs by their athletes is very carefully supervised. This is particularly true in the case of women from the Eastern European countries. I know that our American girls are just beginning to take steroids to compete with their sisters from Europe. This is, an unfortunate situation but all the more important is that they do not have careful medical supervision in their use of the drugs as do the European girls.

Women using these drugs run much greater risks than men, and therefore, their use becomes a very dangerous practice. An interruption or total cessation of the menstrual cycle and the growth of excessive facial and body hair frequently occur when taking steroids. After the athletic season the removal of the steroids and the application of estrogenic hormones is supposed to reverse the unwanted side effects. There is the possibility of irreversible side effects.

At this point one might ask the question: If these drugs are being so widely used by international athletes, are college and high school athletes turning to them as well? A few years ago a friend of mine who threw the javelin and was a place kicker on a leading California football team told me that every two weeks the entire team lined up, pulled down their pants, and were given their shot by the doctor. My friend was certain from his track and field experience that they were receiving anabolic steroids, but his teammates had no idea what the shots were. Just the other day a high school football coach told me that one of the leading Southern California high school teams has a player that supplies amphetamines to all his teammates before every game. The coaches are aware of what's going on but they steer clear of this situation.

The two years I was coaching high school track and field in 1964 to 1967 I knew from the remarks of the teammates that two of my athletes on a team of 110 were using amphetamines during competition. I never could catch them actually taking the drugs, but I strongly warned them against the risks they were running if they were acting so foolishly. They simply smiled and continued to get high. I am sure the incidence of drug use to improve athletic performance has grown considerably among high school athletes since 1967. And other drugs which were not even mentioned in 1967 by high schoolers are now much more prevalent. Just last fall I was told by some high school football players that a teammate of theirs was going to give it a try in a game with mescaline. This would have been unheard of in 1967.

The International Olympic committee has set down a series of strict regulations in respect to the use of drugs in Olympic competion. The International Amateur Athletic Federation, the governing body for tracks and field, also has established strict rules in respect to drug usage in competition. Both organizations have published an extensive list of prohibited drugs. Where a man is suspected of having taken a stimulant, urine tests are given, and should they prove positive, he would be banned from competition. In respect to the use of steroids the regulations against them are practically unenforceable because the drug is so difficult to detect and the test is so elaborate. The California Interscholastic Federation, the governing body for high school athletics in Southern California, has no specific rules against the use of drugs in sports but leaves it to their member schools to establish the regulations for its athletes.

Rules regarding the use of drugs have been passed by sports organizations and schools and undoubtedly new regulations will follow. The July 17, 1969 issue of *Sports Illustrated* expounded that sports is "...designed to focus attention on the participants; to measure their weaknesses, virtues, strengths, speed, agility, stamina, intelligence, instincts, resistance to pain and pressure, and their self control. The mystery and drama of sports for both participants and spectators has always been the unfolding action that occurs when men match these intangible elements of their characters." From my personal experience as an athlete, I believe there is even more to the mystery of sport. The traditionally accepted moral and philosophical concepts regarding competitive sports are being openly challenged by man's instinctive desire to ascend to untrodden levels of human accomplishment using any road which may get him to his goal.

The code of conduct among athletes in respect to adhering to the extrinsic rules, by that I mean the on the field regulations governing the competition, is among the most exemplary in the world. Would that more of our political, military, and industrial leaders exercised the same ethical consciousness. The intrinsic rules, however, are a different matter. I think most adult athletes feel what they do to their bodies is their business. What they eat and drink, what vitamins they take, and what drugs they use to improve their athletic performance should be left to them. They feel any other athlete in today's world can seek out or be provided with similar scientific resources.

From a practical point of view it is impossible to equalize athletic opportunity for all the athletes from every nation in respect to food, equipment, facilities, financial subsidy, geographical location, social systems or the accessibility of scientific knowledge and modern pharmacology. Regulations against so-called "unfair athletic advantage" as altruistic as they may be have failed.

Thus far, the most effective means to achieve the most balanced advantage for athletes from diverse nations has been the situation that has naturally evolved notwithstanding the strictures. That is: each separate nation provides all the best it possibly can for its own promising athletes, everything from education and jobs to sports medicine.

But what of the possible dangers associated with using drugs in sports, particularly for youth? Because so many young athletes continue to use these potentially dangerous drugs, even faced with the possibility of loss of reputation and expulsion from their sport, we must confront the problem honestly. We know too little about the actual effects of many chemical substances used by athletes. If we accept the reality of how many youngsters are indiscriminately using drugs for sports, I believe we have the obligation to ascertain the information which will help protect their physical and mental health.

Of course, the righteous will say, "Those who violate the rules must face all the consequences." I consider this an abrogation of responsibility. If we simply say the use of such and such a drug is prohibited in sports, we make it impossible to do what is most necessary—extensive research involving hundreds of competing athletes, and it must be immediately begun.

The Amateur Sports Act of 1973, which I pray is enacted into law, can provide the authority and means to initiate truly meaningful research into sports medicine, the kind that I know is being done in Eastern Europe. But we need not cheat on the international rules. The Amateur Sports Board could, I believe, secure a temporary dispensation from the drug rules for hundreds of volunteer American athletes in various Olympic sports to participate in blind tests of the actual effects of various restorative and additive drugs on athletes. The honest and factual information that could be derived from this type of approach would do far more to stem the severe dangers to our young athletes we now face under our present procedures.

Present and future information on the effects and dangers of using drugs in sports must be honestly presented to our high school and college athletes. It is not sufficent to have an NCAA newsletter with an unconvincing drug warning to coaches and athletes or some other occasional periodical articles on drugs in sports lying in coaches desks or hanging from the bulletin boards. Informative and authoritative films on the subject must be produced for high school athletes. Symposia with experts and prominent athletes must be presented in our schools to inform our youngsters. The best of these meetings could be filmed, edited and made available throughout the nation on educational television or directly to schools.

I have requested the school board where I teach to allow me to work with them to begin next fall a program dealing with the use of drugs in sports. I hope Santa Monica, California will lead the way for other communities to do the same.

As I look back at the eight years I experimented on myself, I feel fortunate that the cautious doses I took did not result in the painful, dibilitating side effects a number of athletes I knew experienced from overdosing on sports medicine. I was lucky, but what of today's youngsters with the peer group pressure, the greater prevalence and availability of all manner of drugs, the increased demands of athletic competition.

It is clear to me that sports organizations must retain and more efficiently implement restrictions on all drugs which pose a potentially serious threat to health. As ineffective as this deterrent may be, it protects some athletes. I also believe, because of their enormous influence over hundreds of thousands of American youngsters, our professional athletes should be compelled to conform to strictly enforced drug rules particularly in regard to the use of amphetamines. This single step would do more in a very short time to reduce the use of amphetamines by high school athletes than anything else I can think of.

Over the long haul, however, the tide of indiscriminate use of drugs in sports can only be turned by a thorough nationwide educational program based on extensive research. Soon my two sons will be entering high school athletics. I want them and all other youngsters to be adequately informed and warned about the use and misuses of drugs in sports, and I intend to do everything I can to achieve that objective.

Senator Bayh. Our next witness is Mr. Eddie Hart, assistant track coach, University of California at Berkeley, and one of our great sprinters in the United States and the world. He holds the world's record in the 100 meters. I think it was 9.9 seconds; and was one of the participants in the 400-meter relay team. As I mentioned to Mr. Hart earlier, I felt like crying because of the unfortunate incident with which he was confronted in the 100-meter competition at Munich. My heart was in my throat when he and his three colleagues brought that gold medal home in the 400 meters.

Mr. Hart, we appreciate very much your coming from across country to be with us this afternoon. I know it has been a real sacrifice for you. I appreciate it very much and apologize to you for the inconvenience to which you have been subjected.

STATEMENT OF EDDIE HART, ASSISTANT TRACK COACH, UNIVERSITY OF CALIFORNIA AT BERKELEY: OLYMPIC SPRINTER

Mr. HART. Thank you.

From my talking with several athletes and from my own personal experience in athletics, I have the following statement to make.

I feel that there are two types of drug problems in athletics. One of course is the social problem because athletes are not immune to society's ills.

The second one, and the one of course we are mainly dealing with, is the use of drugs in athletics to better an athlete's performance in competition.

In my earlier years of competition, from my junior high school and high school years, and from my own experiences in seeing what was happening with athletes taking drugs, I don't feel athletes in junior and high school competition are using drugs to better performance.

Senator BAYH. Would you pull the microphone a little closer, please?

Mr. HART. Yes. I don't feel that they are using the drugs to better their performance. I think in the particular town that I grew up, that it was merely a social problem. I feel that athletics can be a tool or a weapon used to fight drugs. I feel it was the reason why I did not go on to other drugs. As I stated earlier, the problem in the town that I grew up in was one of a very high usage of drugs. I know that many of the athletes that I felt were of the same caliber of athletic ability as I went on into the drug bag, due to the problems that existed in our town, instead of continuing on in athletics. I felt personally that athletics had something for me. I don't know what. I guess I looked at the Olympics and competitions of this caliber and felt that this could possibly be for me, and at that time decided to go on and make a strive for the Olympic team.

What I did, Senator, I interviewed three athletes that were taking drugs, and devised questions that I felt could possibly be helpful in finding out the whys and how to go about possibly getting rid of or eliminating the drug problem as it now exists in athletics.

The first question, just to start with, I tried to deal with what percentage of athletes use drugs. And two of the persons that I interviewed were athletes that were in track, and two were shot putters. One was also a weight lifter, and incidentally, he had his own gym and had access to many athletes that did use anabolic steroids, and he actually advised others as well to use steroids.

And in weight lifting, he indicated to me that there are four classes of weight lifting: There are third, second, first, and the master class, being the highest of the four classes. Class 1 and the master class had to have more weight to be lifted. And he felt that 75 percent of the athletes in class 1 and the master class were using anabolic steroids. He felt that the percentage of athletes using amphetamines was a much lesser percentage.

One athlete that shot puts indicated to me that during his college years, he also played football in college and that he did use amphetamines and felt that they did work. It seems that athletes use amphetamines in football to help get them up for the game. I don't know, but it is a very trying and difficult thing to do, coming back play after play, and he felt that this did the job for him. So I think there is a high usage of amphetamines in football. I think there is a high usage of amphetamines in pro football as well as amateur.

This person also indicated to me that shortly after his playing football in college, that he tried out for a pro team and right in the middle of a doctor's lecture on drugs, an athlete got up and stated that there was no way he was going to play football without some "jelly beans," which is amphetamines.

My next concern was dealing with the amount of time that the steroids or drugs the athletes use take to have an effect on them? And they indicated to me that with the usage of steroids that the amount of weight, workload, and the amount of steroids that you take made the greatest difference in the effect of the steroids. They explained to me that body weight had a lot to do with how steroids would affect your body. It seems as though the more you weigh, the more the steroids would affect you in that it would cause your hormones to reproduce more muscle fibers and, of course, in consequence you would gain more weight. The lesser the weight, the lesser the effect it would have on you.

The reason for athletes using the drugs was simply because their competitors were using the drug, and in order to obtain an equal advantage, they would take the drug themselves.

The three athletes that I interviewed felt that they really didn't necessarily need the drug as far as bettering themselves or their performance, but simply to have equal advantage with their competitors, they felt compelled to take the drug.

There are various kinds of steroids that they brought up and there is one in particular. Let's see, premabolin; they thought it was the strongest steroid used. It seemed to them to produce strength at a much more rapid rate. Halisterton is a drug used to arrest cancer in the breasts of females. This is one particular type of steroid and this, incidentally, was a steroid that was used by a shot putter in the 1972 Olympic team.

The athletes did not feel that the steroids changed their personality in any respect. One did indicate to me that he felt more competitive; he felt more willing to compete well in competition.

For the amphetamines, they felt there was a direct effect upon their personality. It caused nervousness, irritations, a sleeping problem, and also they felt a psychological and physical dependence as well. They did not really think that they could recommend the usage of steroids. The amphetamines they felt had no value to them whatsoever in shot putting. They felt it impaired their judgment and slowed their reaction time. The weight lifters explained to me that there are key things that are involved in the snatching of very large amounts of weights and they must be in complete control of their faculties at all times.

Another thing that I think has a great deal to do with the wide usage of steroids is how the drugs are obtained and the costs. They indicated to me in order to find out how to obtain steroids, they simply asked someone that they know who was using steroids this guy will either get an oversupply in order to supply him, or merely tell him which doctor he is getting the drug from.

They indicated to me that 50 tablets of 2 milligrams each costs in the United States $4.75. They also indicated to me that this was approximately the same cost of the drug in Europe while in South America and Mexico, the same amount of drugs could be purchased for about a nickle, and they explained to me that large vials of drugs were brought back from the 1971 Pan American games in large quantities and were distributed throughout the United States.

I also wanted to find out the amounts of the drugs, of the steroids, that the athletes were using, and they explained to me that the more you took, the lesser effect it had on you. As they explained to me, if an athlete wanted to raise his hormone balance by 1 point, he must consume 10 milligrams of steroids. After extended usage, it will take twice as much to raise his normal hormone count up to this point because while he is taking the steroids, his normal hormonal count would fall below normal and so he must double his dosage in order to get it back up. He must double it in order to get it up to the normal balance. He is now immune to the 10 milligrams of the drug, and he must now take 20 milligrams of the drug to activate and raise it just one point.

I listed here several ways that I feel that could possibly help in stopping the widespread usage of steroids or drugs. One way is through urinalysis testing in all major national and international competitions. This is one way that we can go about stopping the usage of drugs. I know that the costs are great, and these testings expensive, but I feel that they are necessary because the athletes are using them and do not seem to have the willpower to stop themselves.

Senator BAYH. If I might just interrupt here a minute, Mr. Hart? I am sure you have heard the response of the NFL Players Association——

Mr. HART. Yes.

Senator BAYH (continuing). To the recommendation that urinalysis testing be conducted or should be conducted. They feel very strongly that this would be an invasion of their privacy. Relative to amateur athletics how do you feel about this kind of testing?

Mr. HART. I think that it would take away a lot of the rumors and innuendoes that are going around as far as the drug taking is concerned. At Olympic trials recently, as well as past Olympics, they gave random urine tests. I don't think that it has anything to do with lessening a person by giving him a urinalysis test or an invasion of privacy. I feel that it is one good way to get rid of the rumors and to find out whether the athletes are taking the drugs.

Senator BAYH. Where do you draw the line, sir? For example, should they be conducted before Olympic trials, at the Olympics themselves, or perhaps before an NCAA championship in this country? What about in the University of California at Berkeley, should they be conducted in the locker room before the game against UCLA or before the Rosebowl? Where do you draw the line?

Mr. HART. I don't know that I can truthfully say I feel that it should be given before every competition, but for the Rosebowl, for instance, I believe that it would be within the realm of possibility to give a urine test there. I don't know where you can actually draw the line. I think, you know, that there is usage of drugs in football as well as track and in all of the major sports. I think that in particular sports, track and football, there is a very wide usage of drugs and there is a need for a checking system.

I think also that coaches should be made more responsible as far as their athletes using drugs. This is on the high school and junior high school levels. At these levels many of the coaches can't really say whether or not the athletes are taking drugs. They don't have the types of access to the athletes that is necessary to determine whether or not they are taking drugs. Another way to stop drug usage is in reorganizing our thoughts and ideas so as not to stress the winning at any cost, but to stress the importance of winning through hard work and dedication. I think here is one other aspect we have to look into because athletes get very involved with the idea of winning at any cost. I think there is a line to be drawn there. I think that these are pressures that athletes place upon themselves.

I know for myself personally at the Olympic trials in July that I have never been that afraid in my ife. I can remember the firey feeling that I felt in my chest and the anxiety that went into making the Olympic team. Here was 10 years boiling down to one race, and I knew that all of these 10 years depended upon this one race. And I feel that stresses like this cause athletes to take drugs.

Thank you.

Senator BAYH. Thank you. I am impressed by your last summary. Apparently you believe that how you play the game is equally important as winning?

Mr. HART. Yes, sir.

Senator BAYH. And taking drugs in order to win at all costs is really not necessary or prudent? Is that a fair assessment of what you said there?

Mr. HART. Exactly.

Senator BAYH. Let me ask you and I don't want to embarrass you, but you have been there, you have been right up on top with all of the pressures and you have talked to the best athletes in the world. We have been led to believe that the weight men, the people that require muscular strength, are the ones that most frequently use the anabolic steroids. In talking with those whom you competed with and your teammates, the sprinters and the track men, in the track competition, have you found that they use steroids? We heard yesterday from Mr. Shinnick, who was at one time the world's long jump record holder, and he said that after resisting over a long period of time, he went through a 4-year period where he used steroids. That is why I wonder what your experience has been?

Mr. HART. I personally have never used steroids. As I stated, there is a social problem here, you know, a society problem as far as drugs are concerned. In the particular event that I am involved in, I know of no cases where athletes are using steroids. I do have knowledge of cases where athletes have used such drugs as muscle relaxers or such drugs as Noraflex. What Noraflex does, it is a particular type of muscle relaxant. From what I understand, it does not work on the nervous system at all. It more or less works directly on the muscle.

For athletes, you know, the bulk of the time you do have a problem of relaxing your muscles. For the sprinters, perhaps this in some ways would be ideal for them.

Senator BAYH. Have you personally noticed athletes who have used various types of drugs; whether they experienced any side effects, any personality changes, or any type of thing like that?

Mr. HART. Not from my personal experience. I think that athletes that are taking drugs, as I say, on a social level, don't tend to take it as much as the average person does. I think that the athletes draw a line in that particular case, but I have no knowledge of the side effects.

Senator BAYH. What is the source of these drugs the athletes use, do they get it from a doctor or what?

Mr. HART. Well, if you are talking about the steroids, as I indicated, they are able to buy large quantities of the steroids for very small amounts of money in South America and Mexico, and they can obtain the drugs there. As I said, in Europe they can obtain the drugs from doctors. From what I understand, many of the men from the 1971 Pan American team brought back large quantities of steroids from South America.

Senator BAYH. How about amphetamines? Where are those from?

Mr. HART. I am not knowledgeable about the sources of amphetamines. I know as far as the situation where I am living, the town, that there are I guess what you would call drug pushers; there are those who sell the drugs, the amphetamines. I don't know. I am sure that there are some athletes that can get the amphetamines from their doctors. These would be the ones they are probably getting the steroids from as well.

Senator BAYH. What is the general attitude of the coaches, trainers, team physicians, as far as the usage of the drugs are concerned?

Mr. HART. I think that the general attitude is one of not taking drugs. However, I do have knowledge of physicians and trainers giving drugs to athletes.

Senator BAYH. You mentioned the trend—the football situation where the athletes were given a lecture about all of the problems and then they were told as an aside that you can't make the team unless you use them.

Mr. HART. Yes.

Senator BAYH. What is the general attitude, at Cal or other schools of similar stature as far as admonishing the athletes and team members about the use of drugs. What will happen from the standpoint of discipline? Is there a general routine that is pretty well followed of policing to see that the rules are adhered to?

Mr. HART. There are lectures—things that are going on throughout the country as far as drugs are concerned—lectures, films, and stuff like that. I do feel that as far as steroids are concerned, that you can't scare people out of taking them. You can tell them that they are harmful to your health, they cause side effects or whatever, but as Harold Connolly stated, as long as the drugs won't kill them dead on the spot, they aren't concerned about what is going to happen 20 or 30 years from now. The same thing as he indicated with cigarette smoking. Cigarette smoking is hazardous to your health but we have quite a few of those who are cigarette smokers.

Senator BAYH. Do you feel that knowing that testing was going to be administered at Munich was a deterrent? Did people stop using amphetamines?

Mr. HART. Yes, as Hal Connolly stated, they probably went through withdrawal and whatever, and were going around trying to use something that would help them through this time when they were not taking the drugs. I do have knowledge of one particular case where with the random testing at the Olympic trials, that one fellow at least did come up with drugs in his test but was able to go on to the Olympics. They did not disqualify him.

Senator BAYH. I wonder why that was?

Mr. HART. I can't say.

Senator BAYH. Well, Mr. Hart, you have been very thoughtful and have made a significant contribution to our record. As I say, I appreciate very much your being here. I am glad to make your acquaintance.

[Mr. Hart's prepared statement is as follows:]

PREPARED STATEMENT OF EDDIE HART, ASSISTANT TRACK COACH, UNIVERSITY OF CALIFORNIA AT BERKELEY: OLYMPIC SPRINTER

After being invited to speak before the Senate Sub-Committee on the topic of "Drugs in Athletics," I constructed a series of questions in order to obtain a clearer understanding of the situation today.

Fortunately, I was able to find three subjects willing to confide in me their experiences with drugs while competing in one form of athletics or another. For this report, I would like to keep the subjects unknown and refer to them as A, B, and C. While the three of them used a drug at one time or another, their ideas differ.

A feels that the drugs are every bit as effective as everyone claims them to be and in order to keep up with the rest of the world, you simply have to take them. He is presently operating his own gym and also has wide knowledge of many other drug users whose primary concern is to improve their athletic performance. Six of the nine weight lifters that were on the 1972 Olympic team worked at his gym at one instance or another and two of them worked there consistently. All of them used drugs. A is also a weight lifter and used drugs while competing at San Francisco State.

B did not feel as strongly about the use of drugs as A, but did believe that the drugs had some positive effect on his performance. B is a shot puter very much concerned with overall body strength. While in college, he also played football and did use drugs to help get him up for the game.

C simply thinks that you can acquire the same effect of the drugs with hard work over a longer period of time. He felt the risks were greater than the improvements.

Questions:

1. What percentage of athletes use drugs?
2. How long does it take to have an effect?
3. Why did you start taking drugs?
4. The different kinds of drugs?
5. Was there any kind of noticeable change? (personality, etc.)
6. Was there any after-effects?
7. Would you recommend the use of drugs in athletics?
8. Do you think you should have used drugs sooner or never used them at all?
9. How do you obtain the drugs and what is the cost?
10. How many milligrams were you consuming a day?

1. *What percentage of athletes use drugs?*

The most commonly used drug is Anabolic-Androgenic Steroids. All three men seem to agree that the largest percentage are Steroid users. They feel that everyone that knows about them are using them. A explained that there are four weight lifting classes (3rd, 2nd, 1st and the master class being the higher of the four), and he feels that 75% of the athletes in Classes 1 and the master are using Steroids. C competed in the Pacific-8 Conference last track season as a shot puter and felt (through conversations with various other athletes) that all of the weight men in the Pacific-8 use steroids.

Another drug not used as commonly is Amphetamines, which is used to stimulate the central nervous system, increase blood pressure, reduce appetite and reduce nasal congestion. C had a totally negative attitude toward this drug and never used it or felt that it could be of aid to his performance. On the other hand, B used this drug not for shot putting but in college while playing football; and he concluded that play for play, he just kept coming back ready to do the job. As he indicated to me, it just seemed to give him the lift that he needed to continue to get back on the line and hit. B felt that at this time, other guys on the team were using amphetamines. It was through a fellow athlete that he learned of the drug. Just past his college football days, he was asked to try for a Pro football team. While he was trying out for the team, there was a meeting on drugs. Right in the middle of the doctor's lecture, an athlete got up and stated that there was no way he was going to play football without some "jelly beans" (amphetamines). B estimated that about 50% of Pro football players use them.

2. *How long does it take to have an effect?*

There are several factors that determine the effect of drugs: body weight, amount taken, work load, and the type of drugs being used. The three subjects felt that it takes about two weeks before the steroids begin to have an effect on the individual. This would consist of a man that weighed about 200 pounds; the lesser the amount of weight, the lesser the time to have an effect. Also given the fact that the subject would be taking 10 to 15 milligrams per day. A 100-pound variable would make a week's difference. Amphetamines being an entirely different type of drug working on the nervous system, works immediately after being taken. B feels that in order to receive the maximum posisble result, you should take concentrated forms of protein with the Steroids. The reason being that steroids cause the body to burn more protein. Also since it does not cause the body to produce more protein, the protein content must be replaced for the steroids to utilize it.

3. *Why did you start taking drugs?*

All three seem to have started for the same reason. Friends were telling them about the drug and its effect on bettering their performance.

4. *The different kinds of drugs?*

There are practically as many types of steroids as there are different sports. Just to name a few: premabolin, testosterone, halisterton, and dianabolin. Premabolin is a type of steroid produced by the Europeans. It was designed to create a situation (in the body) to build muscle and body strength at a more than average rate. But unlike the other steroids, premabolin does not retain an abnormal amount of water in the body. This drug was designed with the athlete in mind. Halisterton was designed to arrest breast cancer in females. This is also a steroid used by athletes. This drug was believed to make the athlete excell faster than the rest of the competitors. This drug was used by a shot puter on the 1972 Olympic Team. Dianabolin appears to have the most positive effect, causing the athletes to gain weight and strength at a much more rapid rate. Steroids are also used in the treatment of cancer and arthritis patients and also administered in some cases before or after surgery.

5. *Was there any kind of noticeable change?* (personality, etc.)

None of the athletes noticed any change in their personality from usage of steroids; however, B seemed to think that he felt a slightly bit more competitive. The amphetamine had a direct effect on his personality (seemed to make him edgy and moody), but he had to confess that the drug got him up for the games. But the come-down was a depressing feeling which made him irritable and harder to get along with. A was in complete agreement with B regarding the effect of the drug. C had never used the drug.

6. *Was there any after-effect?*

B and C felt that there were no after-effects but they had only used the drug (steroids) for a short period of time. They did feel that prolonged usage of steroids could possibly produce some bad side effects. A felt that there were no side effects and also felt that even using drugs over a long period of time would not cause any side effects. He knows a weight lifting Olympic champion who has been using the drug for more than 10 years and has witnessed no side effects.

All three agreed completely that amphetamines cause a loss of weight, changes in personality (nervousness, irritable), and problems in sleeping. Amphetamines could cause a physical and psychological tendency.

7. *Would you recommend the usage of drugs in athletics?*

A said yes because he felt that there is no way you can keep up with the athletes in the world today unless you use drugs as they do. B feels that it is a personal decision; if you wish to use drugs, they are available. C did not advise the use of drugs. He feels that through hard work and dedication, an athlete can obtain the same effect as with drugs.

8. *Do you think you should have used drugs sooner or never used them at all?*

A was a finalist at the NCAA Championships in weight lifting and feels that under a proper steroid program, he could possibly have been the NCAA champion. B's overall attitude was that everyone was using drugs to advance themselves so why not. C felt it was a waste of time and money to use drugs.

9. *How do you obtain the drugs and what is the cost?*

a. Through a doctor's prescription.
b. From a friend who has an over-supply.
c. In their travels in Europe, Mexico and South America.

Cost:

U.S.A. $4.75, 50 tablets (2 milligrams each) through a doctor's prescription.

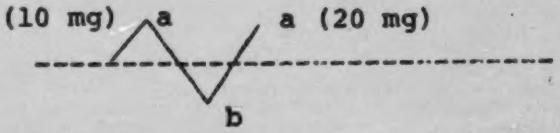
Europe, $4.75, Same amount as above but you do not need a doctor's prescription.

South America and Mexico, $2.00, Same amount as above but you do not need a doctor's prescription.

10. *How many milligrams were you consuming a day?*

A started with 5 milligrams per day and after 14 months had worked up to 50 milligrams per day. This was due to the fact that after the effect of the original 5 milligrams wore off, the body strength dropped below normal and the athlete then had to increase the amount of milligrams in order to get the same effect.

Example:



Given that the dotted line is a person's normal hormone balance, if he wishes to activate or raise it to point (a), he must consume 10 mg of steroids. Extended use of the drug causes a person's gland to discontinue producing hormones and thus his hormone count will decrease and fall below normal to point (b). In order to obtain a normal hormone balance, a person must now consume 10 mg of steroids and his body at this point is immuned to the 10 mg of the drug and he must now take 20 mg of the drug to activate and raise it to point (a). This example is a problem that the athletes are aware of so what they try to do is to stop taking the drug while the gland has stopped producing hormones and, hopefully, in this way they can prevent the hormone count from falling below normal. To do this the athlete might take the drug for two weeks and stop for two weeks, but there is no definite way of knowing what is exactly their hormone count.

For some, this method has proven to be effective; and for others, they simply take a larger dosage of the drug. The three subjects that I interviewed had never tried the two weeks on and two weeks off method. They had simply advanced to a larger dosage of the drug.

A also indicated that the dosage has a lot to do with how you are informed of the drug. He said that some athletes who were on the drug told him that they would never take as much as 50 mg of the drug per day, while he had personal knowledge of other weight lifters consuming as much as 100 mg per day. A also added that most of the weight lifters on the 1972 Olympic Team each averaged 50 mg per day and that one took as much as 80 mg per day. A attended several teenage National Championships and through observation and conversations, he felt that 50% of these young weight men were using steroids.

B and C had never advanced to a larger dosage. B had only taken a maximum amount of 25 mg per day while C had taken an even lesser amount of 10 mg per day.

The three subjects also agreed that the use of drugs pertains totally to males, even though A did have knowledge of one case where the Press Sisters from Russia had been disqualified from international competition because of the use of steroids.

In my observations and in my conversations with these athletes, I believe that 99 per cent of the athletes using drugs feel that this is not a true way to obtain success. However, they are aware of the fact that their competition is using the drug so consequently they feel compelled to take it also. The three athletes also confessed that they wished there was some way to insure the complete stoppage of drug use in athletics for all concerned. In this way only can we guarantee success in athletics through hard work and dedication.

Some ways to secure this stoppage of drug use is:

1. Through urinalysis testing in all major and international competition.
2. Putting more pressure on doctors with regard to their involvement in the wide use of drugs by athletes.
3. Making coaches more responsible with regard to their athletes using drugs (stressing the will to win through more positive measures).
4. Keeping the young informed as to the harmful effects to their body of using drugs.
5. Re-organizing our thoughts and ideas so as to stress the "winning at any cost," but to stress the importance of "winning through hard work and dedication."

GENERAL STATEMENT ON "DRUGS IN ATHLETICS" BY EDDIE HART

In talking with several athletes and in my own personal experience in athletics, I have the following statement to make.

There are two types of drug problems in athletics:

1. The drug problem that society has because athletes are not immuned to society's ills.
2. The use of drugs in athletics to better an athlete's performance in competition.

In my earlier years of competition (junior high school and high school), I felt that due to the drug problem that existed in our town, many athletes of the same caliber as I did not succeed in athletics because of their involvement with drugs. Athletics for some people is a defense against drug usage because if you are truly dedicated in bettering yourself athletically, you have no time to get involved in the drug scene.

In my interviews with various athletes, I asked the following questions:

1. What percentage of athletes use drugs?
2. How long does it take to have an effect?
3. Why did you start taking the drugs?
4. The different kinds of drugs?
5. Was there any kind of noticeable change? (personality, etc.)
6. Was there any after-effects?
7. Would you recommend the usage of drugs in athletics?
8. Do you think you should have used drugs sooner or never used them at all?
9. How do you obtain the drugs and what is the cost?
10. How many milligrams were you consuming a day?

From their answers, I have found the following to be true:

1. A large percentage of athletes do use drugs to obtain a higher level of success in competition.
2. Most athletes start the use of drugs because other athletes who use them have found them to be of value. Also, they feel this gives them a psychological boost.

3. The Steroid drug is the most commonly used in athletics because if properly used, it can cause weight gain and overall body strength.

4. Amphetamines are also used but to a lesser degree. They are used primarily for "psyching-up" purposes in team sports more than in individual competition.

5. Other drugs used from time to time by athletes are:

a. Pain killers
b. Muscle relaxers
c. Norflex
d. Sleeping pills

Most athletes use these only when necessary.

6. The general consensus of drug users is divided. Some feel it is not in any way harmful and others would not recommend its use at all.

For some athletes taking a drug would be the equivalent to running on a Tartan track with technology being his basis of support. Taking drugs to improve his performance in any form would certainly not be a crime by these standards. Dealing with this situation, we must find ways to convince or prove to the athletes that drugs pertain to the ill and not to the strong of health.

I will have a more detailed report available.

Senator BAYH. Our next witnesses are officials for the AAU, the Amateur Athletic Union, David G. Rivenes, president, AAU, and Roy Goddard, M.D., and chairman of the AAU's Sport Medicine Committee.

Gentlemen, we appreciate your being here.

STATEMENT OF DAVID G. RIVENES, PRESIDENT, THE AMATEUR ATHLETIC UNION (AAU), ACCOMPANIED BY ROY GODDARD, M.D., CHAIRMAN, AAU SPORT MEDICINE COMMITTEE, INDIANAPOLIS, IND., AND OLLAN CASSELL, EXECUTIVE DIRECTOR OF THE AAU

Mr. RIVENES. Mr. Chairman, I have with me Mr. Ollan Cassell, the executive director of the AAU, and I have asked him to come because I think that he can help answer some of your questions better than I since he was a fairly recent athlete himself, if that is O.K. with you?

Senator BAYH. Fine.

Mr. RIVENES. Senator, I am David Rivenes, president, AAU, and I would like to say at the outset while Mr. Connolly painted a rather frightening picture—those were your words—of the drug picture, I am very happy to report that we see just the other kind of a picture. Just 2 weeks ago I came from a competition at Missoula, Mont., at the University of Montana, where I watched 1,100 wrestlers; the largest wrestling meet, I believe, in the history of wrestling any place in the world. I watched 1,100 wrestlers all at one meet, and I can guarantee you that there were not only no drugs used by any of these athletes, but there was no liquor, no beer, no alcoholic beverages of any kind used and no stimulants, no cigarettes, and every athlete kept hours and was in perfect condition at all times during the 4 days of competition.

Senator BAYH. How does one make such a broad, sweeping police-keeping statement, if I may ask?

Mr. RIVENES. Very simply, the oldest athlete there was 14 years of age, and the youngest was 6. [Laughter.]

Senator BAYH. I am glad I asked that question.

Mr. RIVENES. And most of the parents were there, and——

Senator BAYH. Did they have any cigarettes or alcohol or pills with them?

Mr. RIVENES. They had nothing with them. I am quite certain. These were all wrestlers.

And I am making this statement because of the fact that I think it is extremely important right now when this is a serious problem, I think this is the time at this stage when you can teach young athletes the importance of not going into using drugs. I think this is probably the most important thing; not to wait until they get into college or at an older age. I think it is important to teach them and to get them into the proper habits at a very tender age and so I think the changes of them going in for drugs are much less if you catch them at this age.

I am sure that some of these young athletes will eventually end up by using drugs, but I think an extremely high percentage of them will not because they are developing the good habits right now.

Senator BAYH. Well, I hope you are right.

Let me go back 15 years ago, or 10 years ago, when some of the athletes like Eddie Hart and Harold Connolly, Mr. Shinnick, and others were growing up, like the group that you just referred to in Montana. If you had that large group of young boys, including these now famous athletes, couldn't you have made that same kind of appraisal of the presence or absence of alcohol and cigarettes?

Mr. RIVENES. I don't know. I can't say. But I repeat, the time to catch them, if at all, is at a very tender age.

Now, this was in wrestling and not track and field. Now in discussing another sport, one that I have been closely associated with and that is swimming, and other quiet sports, I feel certain that in 1964, for example, in the Olympic games at Toyko that there was no use of drugs of any kind by the swimmers. I just a few minutes ago asked Donna——

Senator BAYH. Maybe we ought to ask Donna to come forth to testify as an expert witness.

Mr. RIVENES. And she said she would back me up. I asked her if there was any usage of drugs by the swimmers, and she said she never heard of any.

In 1967, I was one of the managers of the swimming team at Winnipeg and was very closely associated with both the men's and women's teams, and I am quite certain that there was no use of any drugs amongst them. I have never seen such big eaters, though, in my life. Instead of drugs, I think they had T-bone steaks: one right after the other, as many as four or five T-bone steaks at one sitting. This is not an exaggeration. It is true. Maybe this is something they substituted, but I am certain there was no use of drugs by the swimmers there.

In 1968, I also am quite certain that this was the case in Mexico City. I don't think I am being naive in making this statement. I believe in 1972 at the Olympic games in Munich, I think as far as the swimmers at least are concerned, this was also true. In other words, I don't think swimmers used drugs. So to say that all athletes, all world class athletes use drugs, I don't believe that is quite accurate. I am not doubting Mr. Connolly's words. I am sure he is correct, 100-percent correct in the statements he made, but I think his statements are referring to track and field. I may be mistaken about that.

Senator Bayh. He himself was a world champion prior to his subsequent use of drugs.

Mr. Rivenes. That is correct, and a great champion too.

I have in my hand here an excerpt, excerpts from various books, the AAU handbook, the code, the International Amateur Athletics Handbook, and various other international rules and rule books that have to do with drugs. For the sake of time, I am not going to read it. I will simply turn it into the secretary and ask that it be included in the record.

Senator Bayh. We will include it in the record.

[The material referred to follows:]

According to the AAU Handbook and AAU Code, section 454.10, paragraph "g":

"Doping is the employment of drugs with the intention of increasing athletic efficiency by their stimulating action upon muscles or nerves or by paralizing the sense of fatigue. Any athlete who uses drugs as above defined shall be suspended permanently from active participation in amateur athletics."

According to the 1973-74 International Federation Handbook, Rule 144, IAAF Handbook:

"1. Doping before or during competition is forbidden.

"2. Doping is the use by or distribution to a competitor of certain substances which could have the effect of improving artificially the competitor's physical and/or mental condition and so augmenting his athletic performance.

"3. Doping substances, for the purpose of this rule, include the following:

"*a*. Psychomotor stimulant drugs, e.g. Amphetamine benzphetamine, cocaine dithylpropion dimethylamphetamine, ethylamphetamine, fencamfamin, fenproporex, methylamphetamine, methyphenidate, norpseudo ephedrine, pemoline, phendimetralzine, phenmetrazine, phentermine, pipradol, prolintane, and related compounds.

b. Sympathominetic amines: ephedrine, methylephedrine, methoxyphenamine, and related compounds.

c. Miscellaneous central nervous system stimulants: Leptazol, amiphenasole, bemigride, nikethamide, strychnine, and related compounds.

d. Narcotic Analgesics, e.g. morphine, heroin, methadone, pethidine dextromoramide, dipipanone.

e. Anabolic steroids."

The above list is not necessarily comprehensive. Cases of doubt as to other substances which may be regarded as doping substances shall be referred to the Medical Committee for decision. Before any penalties are imposed under this rule. The actural doping substance must be identified beyond reasonable doubt.

"4. Anti-doping controls shall be carried out under the supervision of a Doping Committee and will take place only when ordered by the I.A.A.F. or by the Area or national governing body responsible for organising or sanctioning the meeting. The Doping Committee shall include a qualified medical officer and an appropriate official of the meeting (e.g. a Technical Delegate)."

Where testing for doping is to be carired out, the method of selection of the athletes to be controlled shall be decided before the event by the Doping Committee. Additional controls or tests may be ordered after the event at the discretion of the Doping Committee.

"5. An athlete who takes part in a competition must, if so requested by the responsible official, submit to an anti-doping control. Refusal to do so will result in disqualification, and the athlete shall be reported to his national governing body who shall inform the I.A.A.F.

"6. Medication administered by any route within 3 days of the start of the competition or event, must be declared to the Doping Committee before the competition or event, by means of official forms.

"7. A competitor found to have used or to be in possession of doping substances at an athletic meeting shall be disqualified from the competition and reported to his national governing body."

Likewise any person assisting or inciting others to use doping substances shall be considered as having committed an offense against I.A.A.F rules, and thus exposes himself to disciplinary action.

Any offenses under this rule shall be reported by the national governing body to the I.A.A.F.

"8. The detailed procedure for the conduct of tests, including the collection of urine samples the method of analysis and the use of accredited laboratories shall be determined by the Medical Committee of the I.A.A.F. Copies of the current approved procedure shall be supplied on request by the I.A.A.F. to responsible organising bodies for the information and guidance of the Doping Committees, athletes and officials."

According to the USA Official AAU Track and Field Handbook, rule XXXII, "Stimulants, Attendance and Transportation," Doping is the use of any stimulant not normally employed to increase the power/action of athletic competition above the average.

Any person knowingly acting or assisting as explained above shall be excluded from any place these rules are enforced or, if he is a competitor, be suspended for a time or otherwise, from further participation in amateur athletics under the jurisdiction of this Union.

The International Amateur Athletic Wrestling Federation (FILA) rules on doping are as follows: "Article 13—Doping" In application of the provisions of article 9 of the statutes and in order to combat the possibility of the practice of doping, formally prohibited, the FILA reserves the right, in all competitions it supervises, require that wrestlers undergo examinations or tests.

In no case may competitors or officers oppose this verification without incurring penalties.

The medical commission of the FILA will decide on the time, the number or the frequency of these test examinations, which will be carried out by means which he considers effective.

Appropriate samples will be taken by a doctor certified by the FILA, in the presence of a member of the executive bureau and of an officer of the wrestler(s) to be tested.

The International Amateur Swimming Federation (FINA) rules on doping are as follows:

In concurrence with the instructions of the I.O.C. commission, adopted in 1972, the F.I.N.A. International Sport Medicine Committee has formulated the following regulations which are applicable to the four disciplines, swimming, diving, water polo and synchronized swimming.

1. These regulations are applicable at all major international competitions which are under the control of F.I.N.A.—Olympic Games, World Championships and area Championships.

2. The doping control program at competitions, will be under the supervision of a commission consisting of 5 physicians chaired by a member of the F.I.N.A. Sport Medicine Committee.

The members of this commission shall be selected by the F.I.N.A. Sport Medicine Committee, and approved by the F.I.N.A. Bureau. The Chairman of the F.I.N.A. Sport Medicine Committee will be responsible for making the necessary arrangements with the Organizing Committee of the Games, for the proper carrying out of the Doping procedures.

3. Procedures:

(*a*) Any athlete may be selected by the commission to undergo a doping test.

(*b*) Routine selection of the competitors who are to be tested, shall be made by the doping commission by a draw, before the start of each race or competition, or as otherwise indicated, according to the following method.

I. Swimming:

(*a*) Two swimmers from each preliminary and semi-final heat.

(*b*) Four swimmers from the final heat, including the winner and those placing second and third.

II. Diving:

(*a*) Every fourth diver in the preliminary round and in the semi-final round if such has been scheduled.

(*b*) The divers placing first, second, and third in the competition.

III. Water Polo:

(*a*) Two competitors from each water polo team entered in every scheduled match.

IV. Synchronized Swimming:

(*a*) Every fourth competitor in "Solo" competition, and the 1st, 2nd, and 3rd finalists.

(*b*) The first, 2nd and 3rd finalist pair in "Duet" competitions.

(*c*) Three (3) members from each team finishing 1st, 2nd and 3rd in the "Team" competition.

4. All competitors who have been selected to undergo the doping test, by draw shall be handed a notification form by a member of the doping commission, prior to the start of the competition. The competitor is required to sign this form.

Those competitors who are selected by virtue of finishing 1st, 2nd or 3rd will be handed a form by a member of the doping commission, immediately after the placings have been determined.

5. Immediately or as soon as practicable after the contest, the competitor accompanied by an attendant shall report to the doping control station at the swimming pool and provide a sample.

A member of the doping commission shall supervise the sample taking procedure and shall properly register the sample.

The collected urine sample shall be divided into two 50 mm transparent flasks which shall be properly sealed and both shall be marked with a code number. No name shall appear on the flasks. One of these flasks will be transported to the laboratory for analysis, the other will be kept in a special container at the swimming pool.

6. When a test is known to be positive, the director of doping control, deciphers the code number and transmits this information to the Chairman of the doping commission.

The chairman of the commission will communicate in writing, the result of the test to the competitor, the head of his delegation and to the F.I.N.A. Bureau.

7. Any athlete found guilty of doping will be immediately disqualified from further competition and the position he obtained in the competition will be annulled.

If the competitor is a member of a team (relay, water polo or synchronized swimming) the competition in question shall be forfeited by that team without being granted the privilege of repeating the contest, the competitor(s) only, whose test was positive, will be disqualified from all further competitions.

Rules of the International Weightlifting Federation (IWF) with respect to doping are as follows: Article 7, paragraph 2.—A medical committee consisting of chairman, secretary and five members . . . shall:

"g" Supervise tests for doping of the first three winners in all categories at world championships and Olympic games. Competitors whose doping tests prove positive shall be disqualified and suspended for a period which will be decided by the IWF Bureau. Competitors who refuse to submit to a doping test shall similarly be disqualified and suspended."

The IWF rules state in Article 23, paragraph 5(f) In addition, an athlete can be suspended or expelled if he "is found guilty of using dope according to the definition of the IWF medical committee. Any official concern in supplying the dope shall also be suspended or expelled."

The International Olympic Committee (ILC) rules on doping are as follows. "The athlete who in an individual sport has been shown to use dope is excluded from the Olympic games. In team sports: (a) The team of an athlete who has been shown to have used dope is excluded if team can benefit from this usage; (b) In those sports (like gymnastics, modern pentathlon) where the team can no longer participate because of disqualification for an athlete, the remainder of the team will be able to take part on an individual basis. The athlete who does not attend for the control will be disqualified."

Mr. RIVENES. In any event, I talked to a young lady who is not a top-notch athlete, but a high school girl, and I asked her what she thought of advertising on television and the commercials that are on TV with warnings not to use drugs. I said, what effect does that have? And she said, I think that they are bad, and I think they actually encourage young people to try them. She said, I think they are bad and I think they should not be shown. I mention this only because it has been suggested that there could be drug education on television. I happen to be the operator of a television station myself, and I feel the same way as the young lady, and we do not use the 60-second spots that come to us because we feel that they do more harm than they do good. I think that there are ways of using television and the newspapers and other media for warnings against the use of drugs, but I think the particular commercials we get are not good.

Senator **Bayh.** Which commercials?

Mr. **Rivenes.** Oh, these are warnings on drug abuse and so on where they play rock and roll music and flash a bunch of colors and so on——

Senator **Bayh.** What about the use of professional athletes?

Mr. **Rivenes.** I am not talking about these.

Senator **Bayh.** We have seen them, I am sure, where during a broadcast of a sports event, somebody runs for a touchdown something, and then says he is high on sports and not on drugs.

Mr. **Rivenes.** This is a little different from the type I am referring to. I am not going to take any more of the committee's time here because we have an authority with us who really is an authority in this area. He has had years and years of experience and research and actually in the control of the use of drugs, and that is Dr. Roy Goddard, who is a practicing pediatrician and chairman of the Sport Medicine Committee of the Amateur Athletic Union of the United States. As I say, he has conducted many, many symposiums, worldwide symposiums and I would rather have him take up your time than have me take up your time.

So with that, I will ask Dr. Goddard to speak to you and I am sure that Mr. Cassell will be glad to answer any of your questions from the standpoint of an athlete or a former athlete, too.

Dr. **Goddard.** Mr. Chairman, I appreciate the opportunity to come and talk about this subject, which I think is a very serious problem. I will submit, as Mr. Rivenes has here, for the record my printed text. I would like to hit some high points in this.

Many people will say, Dr. Goddard, you are involved in so many things here in the area of sports and other matters as a pediatrician, primarily interested in pulmonary diseases, but actually we are engaged in the treating of normalcy in our community and our citizenry, and that is my major objective in life; to raise healthy citizens and keep them that way. And if we come out of your meetings with concept of what is normal, we will be going a long way. Actually, we are really trying to achieve the raising of normal, healthy citizens and keeping them that way, and that is the context I would like to talk about now.

Some years ago when I was asked to chair this committee, this sport medicine committee, as a pediatrician I asked why. And they said, Dr. Goddard, we want you to tell us when is an athlete physically and mentally ready to compete. There is a very easy answer to that. He is ready when he is motivated, when he is physically in condition, and when he is properly supervised. Now, without going further into all of this—we have gone into it further in exhibit A—into the various functions of our sports medicine committee, which get into that question and other areas, including the justified use of drugs in sports. So I will just refer that to you.

Now, the justifiable use of drugs by those engaged in sports activities is an area I want to take a little bit of time on. It is also a symposium we had at the national meeting of the AAU last November in Kansas City and we discussed the various justifications and good points and bad points of usage and so on.

I would like to go back just a moment and use an analogy to sports that I have used in my talks to parents and others. I happen to be primarily engaged in respiratory problems in children and let's remember that all of us were kids before we become adults. Now, if you buy a car, you expect this car is going to run without any problems and then you probably are disappointed because it has a lot of little idiosyncrasies and things that go wrong with the car. Perhaps the gas line gets plugged up. It gets a little sluggish, so you add a few additives to it and you have to do that and you get your mechanic to tell you how to unplug the gas line. Or if you are in an accident, then you have to repair the damage before it will perform adequately. Now, let's take the human body that we say should act much the same way as a car does. We are supplying oxygen to our tissues, to the engine, which is their cardio-respiratory system, and so to their pistons—and let's say our pistons are our arms and legs—and if we have some malfunctioning of that body system, we can't get the oxygen or the gas down to those tissues and then we are functioning much the same way as a car whose carburetor isn't functioning properly. And if we injure that body, then perhaps we have to repair that body before we can expect it to function perfectly normally. Well, with that as a little preamble, I would like to say that the use of and justification and philosophy of good medicine is to me to keep this body of ours functioning as normally as possible and we believe that to achieve that, we should certainly use very selectively and judiciously any medicine or treatment.

Therefore, I would like to state that there are three main areas in which medicinal help is warranted.

First, if we have a deficiency, then I think we have to supply this deficiency. That is, if a body is lacking a proper substance, we should provide it. The diabetic we have to provide with insulin. In the case of cystic fibrosis of the pancreas, we have to provide pancreatins.

The second instance is in the case of disease. Some of our people inherit disease. You heard Mr. Connolly say one arm was shorter than the other, and he overcame this deficiency by concentrating on the other one and——

Senator BAYH. You will excuse me just for 60 seconds, and I will be back?

[Brief recess.]

Senator BAYH. You may continue.

Dr. GODDARD. As I mentioned, I believe the three areas that are justifiable to use drugs in the practice of medicine are if you have a deficiency. That was the first. Now, if you have a disease, whether you inherited this condition or subsequently contracted this condition, which lowers your normal functioning, then I believe you are justified in correcting this abnormality by physical, psychological, and other medicines.

Thirdly, if you have an injury and if a patient becomes incapacitated because of this injury, or a person, then I think you are justified in correcting this deformity, or injury, if you have to, with the use of drugs to get the patient back to functioning as normally as possible.

Now, I think these are the only justifications for the use of drugs in our patients and I think we can talk of these in the use of athletics also.

I understand and I have been a competitor myself, and I have been a physician, I have been a patient, I have been a manager, and I understand our American way of life. We have participation at all ages and this is right on down to the grade school level. I have mentioned that we have seen that kids can participate at very early ages. An 8-year-old can get out and run 3 miles and do a much better job than you or I if he is in physical condition and is properly supervised and he has the proper mental approach to this. So sometimes we are pushing our kids into this, and that's O.K. if there are improper mental conditions and physical conditions.

The challenge beyond the usual physical education activities now programed in our schools involves two main areas; intramural sports programs and competitive athletics. Possibly we don't have as much intramural programs as possibly we have too much highly competitive programs.

I think again as a physician interested in helping human bodies, that we should think in terms of teaching our kids to have those healthy human bodies without the use of drugs, whether they are patients or whether they are competitors, and build them up to the level of what is considered normal without giving them an undue advantage over any other competitors.

I would like to digress just a moment from my statement. Over the years as Mr. Rivenes has indicated, we have studied the physiology of competition. We have studied altitude effects, we have studied drug effects, we have studied the influence of sex, and so on. I have come up with some criteria that we have used and I want to mention these just a moment and then tell you why.

What makes a world champion? I think a world champion has to have a little bit of ability or agility or coordination, whatever you wish to call it. I think he has to have a heck of a lot of motivation and drive and desire and initiative or whatever you wish to call that. He has to have proper supervision or coaching. He has to have proper conditioning and that has to be all year around, and not just a 3-month period of the year type thing, and this includes his mental conditioning. He has to have adequate and proper facilities all year around, which a lot of our athletes don't have. What is more important, he has to compete at championship level. You will never be a world champion if you don't compete against world champions. After a lot of research studies, we have done in cardiopulmonary competence—and incidentally, that is an important consideration. What do we mean by this? We mean that one athlete can stand at the starting block and the motor is running at 180 pulse and another athlete's motor is running at 120. Now, who has the advantage? Probably the person at 120 who hasn't already got his motor running and who isn't performing off the starting block before they are actually in the event itself. And by studying the cardiopulmonary competence of this individual—and how cardiopulmonary competence is related to athletics—we think we can even say to you of the persons at the starting blocks numbers three and five are limited material, and the others are going to be good competitors, but they are not good Olympic material. I don't think in spite of all of these you can become a champion without factor number two, which is desire and motivation. And whether it is Harold Connolly or Eddie Hart or who it is, if they are not motivated to produce, then they are not going to produce and they are not a world champion, and that is seen over and over again for individuals and teams.

I haven't mentioned drugs in those seven criteria at all, and I don't think drugs should be in them, and I think the only justification, at the risk of being repetitive, for the use of drugs is if you have a disease, an injury, or a deficiency.

Now, you heard about the various drugs that are used, and I will very briefly touch on them.

First, vitamins, stimulants, tranquilizers, androgenic-anabolic and other steroids.

Now vitamins act primarily as catalytic agents and are not metabolized. If you have a person who eats a balanced diet, you receive all of the vitamins you need. No amount of vitamins has ever been shown to increase—and we can give you or show you statistics on this—increased athletic performance when you evaluate these in what are called double-blind studies, that is, athletes that are on them and athletes that are not. There is the danger of overdosage with fat-soluble vitamins like the old cod liver oil, which are not easily absorbed. The water-soluble vitamins are simply excreted in the urine. If you want to say it, Americans can be said to have the most rich urine in the world because we pass through our urine vitamins. It is loaded with vitamins. The absolutely only justification for the use of vitamins again are for deficiency.

Let's talk for just a moment about stimulants. The amphetamines, commonly called bennies, now these drugs are related a little bit to epinephrine, which is produced in the adrenal gland and is the so-called the fight or flight secretion. They also have a definite effect on the subjectivity of the person. Now why does somebody take it? Because they think they are going to do better because somebody on the team told them so, and if you ask the people who use these, they will say they feel better or are sure they will do better, but a lot of this is psychic input. Now whom are we kidding? A good athlete has the ability to psyche himself up at the proper time. So-called scientific experiments unfortunately cannot duplicate the natural excitement and valid stimulation of real competition. We just can't do it. We have studied athletes and monitored them in practice and so on, and it is not the same as real competition; the result from the stimulant is not the same. So we have to say a good athlete has the power to psyche himself up at the proper time.

Now there has been a very good double blind study done in France with horses over the past 5 years. They have studied every single Wednesday all of the drugs used in "doping" of horses, and that study has demonstrated that in no way can any drug make a horse run faster or consistently improve his performance.

Amphetamines, as you probably know, have been used to help athletes lose weight—not to gain weight—lose weight so he can make a lower weight. If you have a lot of kids on these drugs so they can get into the next competition, now that is an unfair advantage for them to get down below their normal weight. You can get into that discussion.

But the problem, as Mr. Connolly and others have just told you, the real danger is addiction. If you get hooked on bennies, you are hooked and it takes bigger and bigger and bigger dosages and you also by taking them mask your fatigue. Now, if an individual is able to compete past his performance capacity, if he gets into a heat exchange situation, he can actually die and there have been some athletes, who were bicyclists, cyclists from France and England who have succumbed to the overuse of stimulants. I know a very fine athlete, whose name was Dick Hollinder, who died by the overuse of drugs. So to get a continued response, you have to go more and more into increasing to larger and larger dosages and that leads us to the growth of addiction. You just heard somebody say he can't play unless he is up and in football you give your team them to go in there and murder the other team because they become aggressive and lots of times they become paranoid.

Now if you are going to depend on subjective feelings, when the athletes become dependent on their subjective feelings, and when in reality their judgment is impaired, they are in more of an illusory state than in a reality state. Obviously if you get them there, you have to negate the amphetamines by giving them tranquilizers. What do tranquilizers do then? They cut down on the nervousness and shakiness, but your performance goes down. You are sleepy, and so on.

Now, what about ephedrine as a stimulant? The main action of ephedrine is to relieve bronchial spasm and deflate the bronchials. It is frequently used in combination to relieve bronchial dilators to potentiate this dilatory effect. A side reaction of ephedrine is stimulation of the central nervous system and, as many of our patients or their patients and their kids will tell us, "Oh, yeah, I don't wheeze any more, but I don't sleep at night and I go off into orbit." So what do we do? We add another drug, a barbituate, or a tranquilizing drug to counteract the central nervous stimulation of the amphetamine. As Mr. Connolly mentioned, overuse of stimulants cause headache, palpitation, nervousness, and insomnia; none of which a good athlete needs.

Well, what about other tranquilizers? They are incorporated into a lot of these preparations. Barbiturates not only produce sleepiness, but if you use them in large enough dosages, they will paralyze the respiratory center at the base of the brain. Presumably ataraxics, like Librium, Valium, and Vistaril, and this type of drug induces a calming effect in the anxious and tense individual without impairing mental alertness. However, many side effects like drowsiness, potential of action of central nervous system depressants, arterial spasm is very high. Arterial spasm cuts down on your blood supply and causes tremors and convulsions. We had kids go into convulsions on the field. The possibility for liver damage and all of the others are to exclude this use in anybody but particularly in an athlete.

I will wind up on the drugs just by taking a moment on the steroids. We produce in our human body 18 varieties of steroids and we don't even understand in medicine today the total interrelated actions of all of those hormones, much less the use of synthetic steroids. The use of synthetic steroids causes the biggest confusions in the checks and balance of a normal state than we have any comprehension of.

If we are going to use steroids, we'd better know why we are using them and judiciously use these for whatever the condition is.

I think that the use of the steroids in athletes should be restricted and steroids are usually used in athletes in orthopedic or muscular-skeletal problems. The biggest danger here is that you override the effect of the inflammation. It is relieved, but because the cause is not relieved, you may have persistent use of the steroids and you may wear away the joints and you are going to wind up limiting the activity of the treated joint. So even though you may get some relief you are going to get deterioration of the cartilage so you will not have a functioning person after a certain age who is going to be able to carry on as a useful citizen.

We also have to use some steroids in the control of skin conditions. We have a lot of athletes with dermatitis in which local steroids are helpful.

I am simply going to very briefly say that the anabolic steroids you heard about, the Durabolin and Dianabol and the others mentioned are advocated usually in debilitated states like oseoporosis, arthritis, convalescence following fractures, surgery, burns, and in geriatric states.

Now, there is not pure anabolic steroid. All of these preparations marketed today have some androgenic or testosterone effects. What does this result in? If you use them in the female, as you heard today, you have excess hair growth, disturbances in menses and other undesirable effects may occur. In addition, with increased synthetic steroids administered to the body, more rapid and dangerous growth spurt may occur as well as a form of liver damage. In those adversely affected by extra steroid hormones in the system, they may develop premature closure of the epiphyseal plates of the long bones, resulting in stunting of growth.

Why then do over 50 percent of weight lifters, shot putters, discus, and javelin throwers take these drugs? Presumably, as Mr. Connolly said, to increase strength and build up their body to increase physical work capacity. In double-blind studies, there is no evidence to demonstrate and increase—and these have been done—increase in strength, motor performance, vital capacity or physical work capacity. Yes, you do get some physical weight gain because you have an altered electrolytic balance and sodium retention, resulting in fluid retention and this does not increase your muscle strength. It simply is a massive phenomenon.

Senator BAYH. If I may interrupt at this point? In the tests for steroids, what dosage level was used?

Dr. GODDARD. There have been tests in the ranges that you have been told here; anywhere from 2 up to 20 milligrams per day and this will get to more and more and more.

Tests done right now in southern California, one of the articles we refer to, showed that there was usually around 15 to 18 milligrams per day.

Senator BAYH. What is the prescribed dosage?

Dr. GODDARD. What is the therapeutic dosage and what are the adverse actions?

Senator BAYH. Yes; in other words, one of the witnesses yesterday felt that the tests were not valid to assess what steroids can do to you—as far as increased physical strength, weight and size—because the dosages that were utilized in the tests were therapeutic doses and not the rather large doses that were used by the athletes.

Dr. GODDARD. And you would have to also go in researching this, come up with results over a period of time and not just months or 2 years, but over a period of 10 or 20 years as to what are the adverse effects that one gets from the therapeutic versus the effects of using two times the therapeutic use or four times the therapeutic dosage.

Senator BAYH. Now, I am not trying to belittle the side effects or that kind of thing, but did the tests that you referred to involve therapeutic dosage?

Dr. GODDARD. I would have to look these up, but my recollection is it is 2½ the therapeutic dosage. You have to again state what is the normal dosage, and that you can look up in your physician's desk reference, your PDR, as to whatever is called normal. For you it might be normal, a normal dosage, but for John sitting next to you, it might be twice what you need. So you can't say what is normal for one individual is normal for another. My recollection is it was about 2½ the therapeutic dosage in the study; this one in southern California.

In one of these so-called double-blind studies involved, as Mr. Connolly says, it involved placeboes where the athlete is given something that is a sugar-coated pill, or he is given an injection of saline or an injection of sugar water so that he thinks that he is getting the actual steroid. And again you have some co[illegible]fusion here, Senator, because you have to ask the question do you psy[illegible] him up by giving him that tablet or injection? He believes he is g[illegible]ng the same thing as the fellow next to him. So these fellows don[illegible]ow what they are getting. You could take a group in which you [illegible] plain give them a placebo and nothing else and psychological stu[illegible] have shown in the treatment of diseases, as in asthma and cert[illegible] other diseases, that actually people improve just by giving them [illegible]acebo so we are dealing now in the realm of the psyche as well [illegible] the actual situation. So it is very confusing, and I have to agre[illegible]n you. I will comment in a moment to the fact I don't think we ca[illegible]nswer all of these questions right now. We have to do more research but anyway, I would like to see the efforts we are talking about put into teaching normalcy, teaching the function of the human body to the youngsters, and then backing them up with studies which come up with conclusions that can't be questioned. I don't know if we will ever reach this stage, but we can sure try.

Well, that brings me right down to my next point and that is motivation. We keep coming back to that, whether it is with or without drugs. What motivated Connolly to do his world record with or without drugs? What made him think he could do it? He did it because he felt that he could do it whether he was on drugs or not on drugs, and I guess we can call this "psychological input." I don't think you can sacrifice this most important trigger and desire in the healthy athlete because by doing that you would take away from him his ability for greatness and achievement. To have him even consider or become dependent on drugs to alter his subjective feelings of well-being and ego is to deprive him of mother nature's greatest contribution to him; normalcy and health. I think if you take those away from him, you are robbing him, and obviously if he begins to react to these synthetic preparations, his body will deteriorate. What have you got? A dredge of society and not the leader of society.

I can't go into the merits of discussing for you the future life of American football players or any other professional enthusiast, as to what his average not only life expectancy but what his average age of being a useful citizen will be. I think that is open to discussion.

Finally, the drug monitoring problem. I should touch very briefly on that just to tell you that you heard it is considered one solution to "doping" in athletics. I don't think everybody in this room understands—perhaps you have been briefed on this, Senator—but it is a complex program and in order to do this you have to develop a reliable scientific checking system. The only thing we now have is the monitoring of the urine. It is expensive, it is time consuming, to say nothing of the psychological inequities and medico-legal problems involved in such programs. You have to take two specimens, you have to seal them, you have the time waiting for them and so on.

Now, I think if we are going to monitor—and I disagree here with Eddie Hart, we should monitor everybody in all major international competitions—but if we are going to monitor athletes, it should be performed on all participants. Actually, many more instances of losers being on medications can be shown than in winners. In the Pan American games in Canada they did monitoring of all of the bicyclists or cyclists, and they had more losers that were on medications than winners. It has been shown.

Now, what is the psychological impact of taking urine specimens and having an athlete wait 2 to 4 hours for results after an event before they can produce enough urine to be monitored?

I have told you of the situations that have happened in the past. I don't think random sampling is the answer, or just testing the person who is a winner and I think that I agree with Dr. Bennett in England that microtesting has to be adequately developed, and to me until our governing boards accept that testing should be for the good of the participant, and not for the withholding illusory benefits of drug usage to an athlete, we should not encourage this unwieldly, complicated and nonproductive monitoring of our athletes.

The position of the AAU on the recommendation of our Sport Medicine Committee of the Amateur Athletic Union of the United States has recommended that such monitoring not be carried on in this country on a local, State, regional, or national level. Unfortunately, we cannot pass such legislation on an international level.

You will probably ask me, well, what do you suggest we can do? I think there are a couple of things we can do, and I very much enjoyed Mr. Hart's comments about things we can do. I think I agree with some of his. I'll tell you what I think we should do. We can go back and start health education in our grade schools and teach the kids how the body normally functions, what happens to the body with participation and exercise. We can physically and mentally condition our kids. We can get them into sports participation for the fun of it to become lifetime sports men and women, and perhaps lessen this idea a little bit that everybody has to be a world champion or an Olympian.

We have to have proper education and training of our teachers to accept this. I have to send letters to teachers, Senator, many times, to allow a kid with asthma to participate at all in physical education because they think he shouldn't be out there, and I want him out there participating if he possibly can.

We have to educate our teachers, we have to educate our coaches—and Mr. Hart said we got to get the doctors educated. But boy, we have to get the coaches educated. If they think it is OK for them to hand out drugs to all these kids, this is something we have to talk about.

We have to get our physical educators educated. We have next door to Indiana in Wisconsin—isn't that fairly close?—Dr. Allen Brian, former Chairman of the AMA Committee of Medical Aspects of Sports, who is actually training team physicians, as to what is a good team physician for professional sports so we have to talk about the training of people in these areas to train our kids, our future citizens. We have to train the individual physicians to understand the problem.

If parents will come to me and say, Dr. Goddard, would you write a prescription for 60 amphetamines for my child, I will say why? I have to understand why I am writing a drug. I think the first gentleman, Mr. Killian, said we in the National Collegiate Athletic Association accept the recommendation of a doctor. That is not good enough for me. I think we have to educate our doctors as to why these drugs are used, if at all. They have to understand what the kid's problem is.

I have a lot of kids on bronchial dilator drugs, but if they are going to compete internationally and are going to be tested for ephedrine, it is my responsibility as an indiyidual physician to put the patient on a drug which will help him but not to stimulate him or give them an unfair advantage. I think that belongs in the physician's understanding of the problems of his own patient or the competitor with a medical problem and he must be aware of the effects and side effects of drugs in communicating with the parents, communicating with coaches, teachers, and so on.

Finally, we have medical societies, the American Medical Association—and we have a whole list here of what I call contact groups, we have set up. Every year we have 25 organizations that meet with each other than get into the area of what are we doing and what are the local and State medical societies that are running sports medical programs doing.

I think Mr. Connolly mentioned we are far behind Europe in sports medicine. We are. We don't have to live up to what sports medicine does in Europe, though. We have some of the finest athletes and we don't have to follow what Europe is doing because they say they have the best medicine in that area.

Now, what else can we do? Mr. Rivenes was talking about TV ads. We have to inform the pharmaceutical houses to control pushing of these medicines. You know, you look on television all the time and see how good it is to take this medication or that medication. I think the pharmaceutical houses ought to be taught how to re-evaluate these pills and what the side effects are.

Next, research. Sure we need research. We need supervised research. Maybe we need throughout the country a network of research projects in which we all agree and we could farm these out to institutions like the National Institutes of Health. The National Institutes of Health have all kinds of grants they give; one is a grant that you, as an investigator, asked them to do and another kind of a grant is a kind that they ask you to do because they think you are equipped and qualified to do it.

Under research is educational institutions; also medical and sports, medicine groups and individuals.

The next item, the television media; the television media I have talked about. They certainly can be detrimental. Why don't we ask television to promote some good series and attack the problem? I would like to see television run a story about a kid that can compete and do a beautiful job and be a world champion without the use of drugs.

Mr. Chirman, I guess we are here to discuss the merits and perhaps the bad effects of using drugs. I would challenge Congress that you could propose strong health education programs, you could support research in drug usage, and you could support appropriations commensurate with these programs.

Senator Bayh. I think we can do that, but do you think we can do that without increasing inflation, Doctor?

Dr. Goddard. I don't know. I have been back and forth to Washington for the past 2 years on all kinds of programs and money is money. It takes money to do these things, but I don't think we can just withdraw from this area. The pharmaceutical houses can put money into some of these programs. The foundations can put money into some of these programs. I think we have to set up some recommendations and guidelines so that you in Congress can come forth with, and these recommendations——

Senator Bayh. Doctor, I have to confess that my question was just a bit facetious. It seemed to me that in view of all the areas in which we are spending money, we ought to be able to find enough money to do what you suggest, without worrying about the inflationary affect of better health for athletes and everybody else.

Dr. Goddard. Well, I won't comment on the $2 million we just put aside to investigate certain activities. I think it would be more important to investigate sports medicine and some of the effects on our kids.

So I thank you for the opportunity to appear before you and will be glad to answer any questions. I hope we covered what you were interested in? I am sure Mr. Rivenes and Mr. Cassell and I would be glad to try and answer any further questions.

Senator Bayh. If I understand correctly, the AAU does not have any testing for drug use at all?

Dr. Goddard. No; it does not.

Senator Bayh. What sort of position does that put your champions in?

Dr. Goddard. Let me have Mr. Cassell tell you what we do and what position it puts our athletes in. We are under international rules. We are not under any other rules other than international competition.

Mr. Cassell. Well, the only competition that athletes are tested right now is in the Olympic games in international competition or certain designated world championships, the IAA, which is track and field, they only administer their tests at the Olympic games and so on.

So the position that the AAU has, which is on the recommendation o four Sports Medicine Committee, is that we don't have a testing program here in the United States for national championships or State championships or local championships.

Senator Bayh. Do you have anything to add to what has been said here already in reference to the responsibility we have and the means we can use to seek out information relevant to just what some of these chemicals, particularly the steroids, do at high dosages? I mean, if we are talking about a therapeutic usage, that is one thing, but when its 2½ times the therapeutic dosage—we have reason to believe that athletes are using eight times the therapeutic dosage—have we any idea of what that does to the athletes? Do we have the responsibility of testing——

Dr. Goddard. I think that you, as a legislative body, could work together with the American College of Sports Medicine, who just had a big symposium on this, because those people have done research in this. There has been a study up in the University of Oregon medical school on this. I think that you could support some of these studies that I think were well done, and possibly if you would want to come up to it. we held an international symposium on the effects of altitude on physical performance at the request of the Olympic Committee because of Mexico City coming up, and this was a combined effort and I think that this committee and others could all come together and have an international symposium on exactly the effects of drugs on athletes and challenge the people who say we have double-blind studies to come up with some answers. We either accept those answers as bona fide or not, and if they are not, we ask them, gentlemen, what do you propose that could be done at once and for all determine what the effects are?

As I said, if you are going to determine if these is liver damage, you don't determine this overnight. This may be 2, 4, 6, 8 years hence and so I am not quite sure that you could get your answer in one meeting, but I think you can challenge the people who have been working on this area—there are a lot of bona fide investigators—to come forth. Possibly it could be a conference on not only doping, but the use of drugs, the judicious use and the injudicious use, and come out, as we did in the altitude study, with some solid recommendations.

Mr. **Rivenes.** Senator, I would like to call your attention to something that AAU has recently recommended. In the past 8 years we have been concerned over the development program and the preparation of the program for our teams going into Olympic competition and we have had clinics in which we have brougth athletes of various sports to a central location and taught or tried to teach the athletes something new and something better and try to get them prepared for international competition. Now, because this could only involve a couple of hundred athletes at a time—a very small percentage of whom finally ended up on the Olympic team—we are now urging the United States Olympic Committee to conduct clinics not for athletes but for teachers, coaches, trainers, doctors, and managers who could then go back home and work to do a much better job with their athletes because they are going to be around for a long, long time, whereas the lifespan of an amateur athlete is maybe just a few years. We feel, as Dr. Goddard has suggested, there must be a lot of education for doctors too, and we have seen examples of where doctors and trainers have made mistakes in international teams and we feel very strongly that we can do a very much bette job by training our doctors and our trainers and so on in the way of international competition and this could have a big effect on the use of drugs or the nonuse of drugs, I should say.

Senator **Bayh.** I understand the AAU policy is against the use of these drugs?

Mr. **Rivenes.** The statement that I will submit for the record here states, according to the AAU handbook and AAU code, section 451.10:

> Doping is the employment of drugs with the intention of increasing athletic efficiency by their stimulating action upon muscles or nerves or by paralyzing the sense of fatigue. Any athlete who uses drugs as above defined shall be suspended permanently from active participation in amateur athletics.

Of course, this is the section from our handbook I was referring to, and which has already been placed in the record.

Senator **Bayh.** Yes, of course.

Mr. **Rivenes.** When we compete internationally, we must follow international rules in all sports, and each of the sports have similar statements to make and various tests and, as I say, when we go in the international area, then we must act accordingly.

Right now I am going to ask Mr. Cassell to tell you about what is going on right now. We have a couple of hundred athletes over in Europe right now competing against the Russians and West Germans, and so on. I'll ask him to tell you what tests if any would be given these athletes and what is the rule there.

Mr. **Cassell.** Well, we at the present time have 188 track and field athletes in Germany to compete in Munich in a few days, a senior team, and we also have a junior team to compete on the 14th and there will not be any tests admiinstered by the organizers of these competitions. We do have with those teams a competitions doctor that has been involved with them for some time and the precaution that this doctor takes is that he asks each athlete to bring with him the type of medicine that he is taking and the drug that he is taking so that they will be aware of any disorders and whatever that might happen. But there will not be any tests administered by the Germans, the Italians, the Polish people, or the Russians prior to or after the competition.

Mr. RIVENES. Is this good or bad, do you feel?

Mr. CASSELL. Well, at the present time, I don't think that it is bad. I think that we have to accept the position that our Sports Medicine Committee has advised us to accept in the AAU, and that is that we don't——

Senator BAYH. Why don't you just tell us what your position is as an individual, not as a representative of the AAU?

Dr. GODDARD. I can answer. He has never taken drugs, and he has been in world competition.

Senator BAYH. Pardon?

Dr. GODDARD. He has never been on drugs, and he has been a world champion.

Senator BAYH. Yes; but I don't think that was the question that was directed. I thought the question directed was to the wisdom of testing; the policy, whether it was good or bad.

Mr. RIVENES. Yes; it was.

Senator BAYH. And I will say amen to your assessment of the nonuse of drugs, but I am just wondering why you don't answer that question?

Mr. CASSELL. My answer was that I don't necessarily think it is bad not to have a test, but, as I indicated, the Sports Medicine Committee of AAU has advise to the national body that we should not have any type of tests for the reasons that were indicated by Dr. Goddard. I don't think it necessarily—don't necessarily think it is bad not to have test.

Senator BAYH. Suppose in a State AAU meet or in a national championship or some other AAU function you have information that an athlete is using a drug which would violate the code. What happens then?

Mr. RIVENES. Do you want to answer that?

Mr. CASSELL. We don't have any method of proving that the athlete would be or is taking drugs and it is rather difficult from a medical and legal standpoint, as Dr. Goddard indicated, to take any action against a person unless you have definite proof. The only steps that could be taken at this point would be to report it to the manager of the team or the coach of the team and the athlete could be kept under observation to see if he continued, and possibly take him into a clinic for medical observation.

Senator BAYH. The code covers a wide variety of drugs that have a specific impact on the human body and have specific and hard facts about what happens if you take them. I am just wondering how you reach the conclusion that an individual is taking drugs?

Is there any investigating procedure for that? Also, you talk about the sanction o fdisqualification. Has that ever been imposed on anyone for the use of these drugs that we are talking about?

Mr. CASSELL. No.

Dr. Goddard. I don't think we have had that instance to my knowledge, but if we had such an instance and we felt it was going to be a detriment to the athlete or his whole team, his teammates, we would probably recommend to the coach and manager that he submit urine or whatever sampling would be involved voluntarily to a laboratory that could run these tests. We are not set up, Senator, we have no methodology set up for this. There has to be facilities set up to do this. We would probably voluntarily recommend that the athlete submit to this.

That could only be a remedy because medically and legally in our code, while it says we do not adhere to this type usage, we cant't throw that athlete off the team nor can we disqualify him because legally somebody can say it is not in the rules and you can't do it.

All we could recommend, Senator, would be that we feel this is detrimental to your athlete, to your team, to the overall conducting of thi ssports event and, if this reoccurs, we give you warning that we may restrict this athlete in the future—well, I am not even quite sure we could do this from a legal viewpoint.

Senator Bayh. Particularly if the athlete said, sorry, I am in a hurry to catch the bus. What would you do then?

Dr. Goddard. Well, it would be his word against ours. Supposing he was on cocaine and he had dilated pupils, and we could feel an enlarged liver and all of these things, we would still have to test him for this and if he didn't do this voluntarily, we right now have no legal way to submit him to this. We could say you will not be considered for future competition if in fact it proves to be the case that he is taking drugs, but we at this point have no ruling. I am sure that you would agree that we would not want to start a group testing all over this country in any small community, or even at a State meet to test athletes even at random and be again put to the expense—and we are talking about expense—and put our teams and all of our kids under this psychological situation. Believe me, if you pulled out of the race on a random basis athletes a couple of times, that would affect the psychological state of the athlete there at the starting block, you know, what goes through your mind whether you are a winner or a loser. He would be wondering, are they going to get me again? I have already gone to the john. That was the very last thing I did before I went to the race, and now I have to go back there and stay 2 to 4 hours and be subject to this thing all over again.

Well, those are the various aspects of it.

Senator Bayh. I would like to see us beat the Russians, but by the normal power given to us. I have an old Puritan ethic, I guess. I would like to see the human body be able to function at its maximum without all sorts of stimulants but I would also like to see the Russians limited to the same rules.

[Dr. Roy F. Goddard's prepared statement is as follows:]

Prepared Statement of Roy F. Goddard, M.D., Director of Pediatric Research, Lovelace Foundation, Albuquerque, N. Mex.

Mr. Chairman, distinguished members of the committee, thank you for the opportunity of appearing before you today to speak to you on a serious problem in athletics—that of the injudicious use of drugs by our competitors. I am Dr. Roy Goddard, a practicing pediatrician and Chairman of the Sports Medicine Committee of the Amateur Athletic Union of the United States. In addition, I am involved in many areas of growth and development, sickness and disease, and recreation and physical fitness.

Many of my friends have asked me why I allow myself to be involved in so many different activities. Gentlemen, I have but one major objective in life—to raise healthy citizens and keep them that way. This objective crosses and involves many professions and philosophies of life. In my profession as a physician, I am involved in trying to see that tomorrow's generation is normal and healthy. As a researcher, I have delved into the normal and abnormal respiratory physiology of children and young adults with investigations of causes, diagnosis and evaluation, and how to keep afflicted children as normal as possible. Yes, and even to allow them to participate in physical activities, including competitive sports.

As a physician, a father of competitive children, and as a citizen, I am also interested in the sports programs of this country, at all ages. This includes an interest in:

1. Physical and mental readiness for sports participation;
2. Women's participation in sports;
3. Sports injuries;
4. The medical and health aspects of World Olympics;
5. The effects of altitude on sports competition;
6. Correlation of physiologic parameters with athletic performance;
7. Correlation of physical education, physical fitness, competitive sports, and recreation programs with the health of the individual (with special emphasis on school-age participants);
8. Feasibility study of a National Sports Medicine Institute; and
9. The justifiable use of drugs in those engaged in sports activities.

It is this last area that I wish to discuss more fully with the Committee today.

My professional field is primarily in the field of chronic respiratory disease in children and young adults. Frequently, our patients are unable to transfer the proper fuel (oxygen) to their engine (the cardio-respiratory system) and so to the pistons (arms and legs) to propel or assist them in movement. One could liken their sluggish performance, or as we call it—"physical endurance" and "exercise tolerance", to the plugged up gas line in a car, or the carburetor that does not feed the proper mixture into an engine. If this malfunctioning occurs in one's car, an attempt is made to correct it by mechanical means or the use of additives to the fuel system. This is the same approach we physicians have in trying to correct obstructed airways in our patients.

If one has an accident and injures a part of his car, then this must be repaired or corrected before the automobile will function again at normal or below normal level. This, likewise holds true in the treatment of our patients who sustain injuries, whether they be broken bones or more involved internal damage.

Just as one assumes that his automobile will serve him usefully, providing he services and maintains it, one can assume the human body, if taken care of properly, will serve us well. But if the individual, or car, does not function at his or its optimal level, then we have to diagnose the illness or malfunctioning, and attempt to correct it. In medicine, we may be able to achieve success with good medical judgment and advice without the use of any artificial aids or medications. However, if such measures do not succeed, then we have to turn to supplementing the human body and its resources and capabilities with medicinal substitutes.

THE USE OF DRUGS IN THE PRACTICE OF MEDICINE

The philosophy of all good medicine, to me, gentlemen, is to keep the human body functioning as *normally* as possible. All of our treatment should be based on achieving as closely as possible this normalcy. If we must turn to the use of artificial substitutes, then these must be selective and judicious for that specific purpose. We consider three main areas in which such medicinal help is warranted:

1. Deficiency—if the individual is lacking a vital body substance—hormone, secretion—then we must supply this for him (e.g., insulin in diabetes, pancreatin in cystic fibrosis of the pancreas);

2. Disease—if the individual inherits or subsequently contracts a condition which lowers his normal functioning, then we must do everything we can to correct this abnormal process by physical, psychological and medicinal means;

3. Injury—if the individual becomes incapacitated because of an injury, then we attempt to correct this deformity or injury to get our patient as closely back to normal functioning as possible.

These, gentlemen, are basis for good medicinal practice, and these are the only justification for the use of drugs.

THE PROPER USE OF DRUGS IN ATHLETES

The American way of life includes physical participation—this is at all ages. We have shown that children can participate at early ages, provided their bodies are in good physical and mental condition and they have proper supervision or guidance. Indeed, we would like to see our American populace much more active at all ages. America is far behind many other countries in this area.

The challenge beyond the usual physical education activities now programmed in our schools involves two main areas—intramural sports programs and competitive athletics. I could enlarge considerably in this area, but will simply state that as a physician interested in good healthy human bodies, our efforts are to encourage our patients, or citizens as the case may be, to participate actively at whatever level they choose, providing their physical and mental conditions are prepared for that level of competition.

In the case of a patient who is not at such a level of participation, we attempt to build him up to that level if we can do this without damage to his body. In essence, we try to make him as normal as we possibly can. But we do not try to achieve super-normalcy, nor do we intentionally use any treatment—physical, mental or medicinal—that would allow him any advantage over any other participant.

This, then, is the justification that we physicians believe should be the guidelines for the use of drugs in those who wish to participate in any physical activities—to reiterate: (1) the correction of a deficiency; (2) the treatment of a disease process; or (3) the correction or care of an injury.

What Makes a Champion?

Over the years, many have offered their views on the prerequisites of a champion. After many studies, deliberations, discussions, conferences, and soul searching, I have concluded that seven major items contribute to the making of a champion:

1. Ability, agility, coordination;
2. Initiative, *motivation*, drive, desire;
3. Proper supervision or coaching;
4. Physical condition (all year round) (including a proper mental attitude);
5. Adequate and proper facilities (all year round); and
6. Competition at championship level.

All of my many medical and coaching colleagues will agree fairly well with these six prerequisites. After several studies in cardiopulmonary competence and the effects of altitude on physical performance, I would like to add

7. Cardio-pulmonary competence.

With all other factors being equal, the athlete who is superior in cardiopulmonary competence will be championship material. One must go back, however, to factor 2 (. . . *desire or motivation*) to really distinguish between the champion and the average sports participant. Over and over again, whether it be individual or team sports, this one single factor is usually the difference in the outcome of all highly competitive programs.

ARE DRUGS NEEDED IN ATHLETICS?

Gentlemen, there is no reference to drugs in these above-listed prerequisites. How can one then justify any use of drugs in athletics? At the risk of being redundant, except for correction of a deficiency, treatment of a disease process or an injury, there is no justification for the use of drugs in athletics. And yet, there are thousands of drugs today marketed to make one feel better to give him a lift, to build his strength, etc., ad infinitum. The major categories of drugs used in athletics are vitamins, stimulants, tranquilizers, steroids and androgenic-anabolic steroids. I will discuss each of these very briefly.

VITAMINS

Vitamins act primarily as catalytic agents and are not metabolized. If a person eats a balanced diet of fresh, well-prepared food, he receives all the vitamins his body needs. No amount of vitamins has even been shown to increase athletic performance in any way when evaluated in double-blind studies. There is a danger of over-dosage with fat-soluble vitamins, while water-soluble vitamins are simple excreted in the urine. Many of our population, including athletes, are the victims of vitamin "pushers". Americans excrete the most expensive urine in the world because it is so loaded with vitamins. The absolute *only justifications* for the use of vitamins again are for deficiency (proven by laboratory tests), helping to manage a disease process, or in promoting healing from an injury.

STIMULANTS

The major stimulants used in athletics today are amphetamines (commonly called "bennies"). These drugs are related to epinephrine (the fight or flight secretion) in some of their actions, and also have a definite effect on subjectivity. Those who use these drugs will invariably state they "feel better and are sure they will do better". However, as we have previously emphasized, most of what an individual does is controlled by his desire or "psychic input". So-called "scientific experiments" unfortunately cannot duplicate the natural excitement and valid stimulation of real competition. A good athlete has the ability to "psych himself up" at the proper time. One of the best studies in this area has been a double-blind study in France over the past five years in race horses. They have studied, every Wednesday, all of the drugs used in "doping" of horses and have measured all the parameters possible. They have not been able to demonstrate in any way that any drug can make a horse run faster or consistently improve his performance.

One of the real dangers in the use of such drugs in humans is not only addiction, but the masking of fatigue. Likewise, if an individual is able to compete past his normal capacity, when combined with heat build-up, he may be subject to heart failure. Studies show delays in pulse and respiratory recovery times after amphetamine usage. Often, to get a continued response, the individual has a tendency to take increasingly larger doses, which frequently leads to varying degrees of agitated, aggressive, and sometimes paranoid, behavior.

When athletes become dependent on their subjective feelings, and when in reality their judgment is impaired, they are in more of an illusory state than in a reality state. Frequently, to negate the overstimulation from amphetamines, barbiturates are used to alleviate the nervousness and shakiness which result as side effects of the amphetamines. As to increased ability or efficiency, performance is no better and in many instances the athlete actually performs worse.

What about ephedrine as a stimulant? The main action of ephedrine is to relieve bronchial spasm and dilate the bronchioles. This drug is frequently used in low dosages in combination with other bronchodilators to potentiate this dilatory effect. A side reaction of ephedrine is stimulation of the central nervous system and, as many of our patients or their parents tell us, causes the user "to go off into orbit", "climb the walls" or "be hyperactive". Frequently, when being used for treatment, one must also give barbiturates or tranquilizing drugs to counteract the central nervous system stimulation. Overuse of stimulants can cause headache, palpitation, nervousness, and insomnia—none of which a good athlete needs.

TRANQUILIZERS

While tranquilizers (sedatives and ataraxics) are not commonly used by athletes, they nevertheless are incorporated into many combination preparations, to counteract undesirable side effects of other medicines. Such sedatives as barbiturates may not only produce sleepiness, but if used in large enough dosages can depress respiration. The ataraxics (atarax, compazine, librium, valium, vistaril, et al) presumably induce a calming effect in the anxious and tense individual without impairing mental alertness. However, many side effects—drowsiness, potentiation of action of central nervous system depressants, arterial spasm, tremor, convulsions, and liver damage—should exclude their use in a healthy athlete.

ANDROGENIC—ANABOLIC AND OTHER STEROIDS

The human body produces at least eighteen known steroids. The total interrelated actions of all these hormones are not fully understood. The use of synthetic steroids causes confusion in the body's check and balances that exist in the normal state. Therefore, it is most imperative that any steroid used in any form of therapy should be most judiciously selected and administered.

Steroid use in athletes should be restricted and usually is for injuries or in orthopedic (musculo-skeletal) problems. Judicious use does speed recovery from injuries, and in many professionals allows participation at a normal or somewhat below normal level. The only other justification for the use of steroids is perhaps for the alleviation and control of skin conditions, which may interfere with athletic participation.

One type of steroid is the so-called anabolic steroid (durabolin, dianabol, maxibolin, winstrol, et al), which has been advocated for use in debilitated states, osteoporosis, arthritis, convalescence following fractures, surgery, burns, and in geriatric states. Unfortunately, there is no pure anabolic steroid, all preparations marketed today have some androgenic or testosterone effects, which may result in testicular atrophy, loss of libido and occasionally prostatic hypertrophy. In the female, hirsutism and other undesirable effects may occur. In addition, with increased synthetic steroid administered to the body, more rapid and dangerous growth spurt may occur as well as a form of liver damage. In those adversely affected by extra steroid hormones in the system, there may develop premature closure of the epiphyseal plates of the long bones, resulting in stunting of growth.

Why then, do over 50% of weight lifters, shotputters, discus and javelin throwers, take these drugs? Presumably, to increase their strength and build up their bodies to an increased physical work capacity. In double-blind studies, there is no evidence to demonstrate any increased strength, motor performance, vital capacity, or physical work capacity. Some weight gain does occur as a result of the altered electrolyte balance and sodium retention, resulting in fluid retention (temporary and not true weight gain, or increase in muscle size or strength).

Again, the most difficult factor to evaluate in competitive participation, with or without the use of drugs is the "psychological input". To sacrifice this most important trigger and desire in the healthy athlete, is to take away from him his ability for greatness and achievement. To have him even consider or become dependent on drugs to alter his "subjective feelings of well being" and ego is to deprive him of Mother Nature's greatest contribution to him—normalcy and health. For, if he persists in addicting himself to the use of synthetic preparations, his body will deteriorate and he will become a dreg of society, not the leader of the future, which he aspires to and which we as the American public, hope for him.

DRUG MONITORING

Many believe that drug detection and monitoring is one solution to "doping" in athletics. What is not well understood are the complexities of such programs, including the development of a reliable scientific checking system, that today is expensive and time consuming, to say nothing of the psychological inequities and medico-legal problems involved in such programs.

First of all, if such monitoring is to be done, it should be performed on all participants—actually, many more instances of losers being on medications can be shown than in winners. The psychological impact of taking urine specimens and having an athlete await two to four hours for results after an event, is depressing to even the best, well-adjusted participant.

Until microtesting is adequately developed and until our governing boards accept that testing should be for the benefit of the participant, and not for the withholding illusory benefits of drug usage to an athlete, we should not encourage this wieldy, complicated and non-productive monitoring of our athletes.

The Sports Medicine Committee of the Amateur Athletic Union of the United States has recommended that such monitoring not be carried out in this country on a local, state, regional or national level. Unfortunately, we cannot pass such legislation on an international level.

RESPONSIBILITY FOR HEALTH EDUCATION AND DRUG USAGE IN ATHLETICS

What avenues of approach exist to us today to tackle the problem of drug usage in athletics? As I see it, there are nine major areas where we can concentrate renewed efforts:

1. Health education to all at an early age (from grade school on through secondary school levels);
a. How the body normally functions;
b. Physical and mental conditioning
c. Sports participation
2. Proper education and training of
a. Teachers
b. Coaches
c. Physical educators
3. The individual's own physician
a. Understanding the problems
b. Communication with
i. The individual or patient
ii. Schools—teachers, coaches, principals, nurses
4. Medical Societies
a. American Medical Association
b. American Academy of Pediatrics
c. Academy of Family Practice
d. American Academy of Orthopedics
e. Local and State Medical Societies
5. Sports—Medicine and Related Groups and Societies
a. American College of Sports Medicine
b. American Association of Health, Physical Education and Recreation
c. Amateur Athletic Union of the United States
d. National Collegiate Athletic Association
e. National High School Activities Association
f. Twenty other inter-related groups
6. Pharmaceutical Houses
a. Control pushing of medicines for healthy states
b. Re-evaluate the benefits of drugs commonly used by athletes as to beneficial and adverse effects
7. Research
a. Medical Institutes and Schools
b. Educational institutions
c. Medical and sports medicine groups and individuals
8. Television Media
a. Serious effort to monitor advertising of drugs which may be detrimental or harmful to normal healthy individuals
b. Promote TV series attacking the problem
9. Congress
a. Propose strong health education programs
b. Support research in drug usage
c. Support appropriations commensurate with these programs

Thank you, gentlemen, for the opportunity of appearing before you in behalf of the 130 million children and young adults and all of the others of us who strive for a normal, healthy life—that we may achieve this and keep our bodies physically fit, without the use of drugs. We implore each of you to consider carefully these matters and lead the country in some guidelines to improve the problems which face us all today in this unhealthy and abnormal use of drugs.

[Exhibit A]

AMATEUR ATHLETIC UNION OF THE UNITED STATES

NATIONAL SPORTS MEDICINE COMMITTEE

Authorization: Appointed by the President of the AAU, December, 1963, approved by the Board of Governors of that organization.

Objectives:

1. Physical and mental readiness for sports participation

2. Women's participation in sports
3. Sports injuries
4. The medical and health aspects of World Olympics
5. Athlete's evaluation of the health aspects of competitive programs
6. Correlation of physiologic parameters with athletic performance
7. Correlation of physical education, physical fitness, competitive sports, and recreation programs with the health of the individual (with special emphasis on school age participants).
8. Feasibility study of a National Sports Medicine Institute
9. Effects of Altitude on Physical Performance
10. The Use of Drugs by Athletes

Membership: The committee is composed of 25 members, appointed by the President from a list of nominees representing the medical and health organizations involved in sports. These members include representatives of the American College of Sports Medicine, the American Medical Association, the American Association for Health, Physical Education and Recreation, Division of Girls and Womens Sports, National Association of Intercollegiate Athletics, Athletic Institute, and the National Recreation Association. In addition, the committee calls upon consultants from over 30 national organizations and representatives of the sports committees of the Amateur Athletic Union.

Activities: The committee functions as sub-committees in the areas listed above. An ad hoc committee is investigating the feasibility of establishing a National Sports Medicine Institute. All day forums are scheduled at the annual meeting of the AAU each December.

Recent Examples:

1964: Symposium on the Medical and Health Aspects of the 1964 Tokyo Olympics

1965:Symposium on the Effects of Altitude on Competitive Sports Participation

1966: International Symposium on the Effects of Altitude on Physical Performance (proceedings of the symposium published by Athletic Institute).

1967: Annual scientific session included: interval training effects on the cardiovascular system of pre-pubescent swimmers; radiotelemetry of world class swimmers; vigorous athletic activity in women, and gastroenteritis in Olympians

1968: Annual scientific session included: contact sports for growing competitors; physiological conditioning for athletes; pre-olympic preparation and olympic performances at altitude; and what we learned from the Mexico City Olympics.

1969: Annual scientific session on: "Sports Injuries of the Amateur Athlete," including conditioning and its influence on musculo-tendon injuries, medical aspects of boxing, and the healthful swimming pool situation.

1970: All-day Sports Medicine Forum including 5 sessions: (1) Conditioning of athletes, (2) Medical problems in athletes, (3) Injuries in Sports, (4) Luncheon forum on Drug Use and Abuse in Athletics, (5)Round table discussions in conditioning, drug abuse, track and field, judo, swimming, boxing, and basketball.

1971: All day sports medicine forum including: (1) Sex and Age, (2) A Reasonable Approach to Physical Fitness, (3) Physiological Effects of Exercise, (4) Psychology of Conditioning and Exercise, (5) Medical Problems Confronting the Competitive Athlete.

1972: All day sports medicine forum including (1) Symposium on Drugs and the Athlete, (2) Are Drugs Justified in Competition, and (3) Training and Conditioning.

[Exhibit B]

SPORTS MEDICINE SYMPOSIUM ON DRUGS & THE ATHLETE, NOVEMBER 27, 1972, KANSAS CITY, MO.

SESSION I

Symposium on drugs and the athlete.
Should athletes be allowed to use drugs?
Vitamins and diets.
Anabolic steroids.
Injectable musculo-skeletal drugs.
Drugs and the athlete.

SESSION II

Are drugs justified in competition?

Current use of drugs in pulmonary problems in local, State, regional and national competition.

The Olympics, 1972 and the future.

The coaches' viewpoint.

The manager's viewpoint.

The Olympic team physician's viewpoint.

International policies.

Should the A.A.U. adopt a policy on use of drugs by athletes.

[Exhibit C]

CONTACT MEETING OF NATIONAL ORGANIZATIONS CONCERNED WITH HEALTH AND SAFETY SUPERVISION IN SPORTS

Sponsored by: Committee on The Medical Aspects of Sports American Medical Association.

ORGANIZATIONS

Amateur Athletic Union.
American Academy of Family Practice.
American Academy of Orthopaedic Surgeons.
American Academy of Pediatrics.
American Association of Health, Physical Education and Recreation.
American College of Sports Medicine.
American College of Surgeons.
American Dental Association.
American National Red Cross.
American Society for Testing and Materials.
Canadian Academy of Sports Medicine.
National Association of Collegiate Directors of Athletics.
National Association of Intercollegiate Athletes.
National Association of Underwater Instructors.
National Athletic Trainers Association.
National Collegiate Athlete Association.
National Council of Young Mens Christian Association.
National Junior College Athletic Association.
National Safety Council.
National Ski Patrol.
National Operating Committee for Standards on Athletic Equipment.
President's Council on Physical Fitness and Sports.
Professional Football Physician Society.
U.S. Public Health Services.
United States Olympic Committee.

[Exhibit D]

THE INTERNATIONAL SYMPOSIUM ON THE EFFECTS OF ALTITUDE ON PHYSICAL PERFORMANCE[1]

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[1] Published 1967 by Athletic Institute.

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CURRICULUM VITAE, ROY F. GODDARD, M.D.

Practicing Pediatrician—Lovelace Bataan Medical Center, Albuquerque, N.M. Director of Pediatric Research. Head, Pediatric Pulmonary Department. Medical Director, Southwestern Regional Pediatric Pulmonary Center. Medical Director, New Mexico Cystic Fibrosis Center. Asst. Clinical Professor of Pediatrics, University of New Mexico School of Medicine.

INTERNATIONAL SOCIETIES

U.S. Representative of International Sports Medicine Committee of FINA (Federation Internationale de Natation Amateur).

U.S. Representative of International Sports Medicine Committee of ASUA (Association of Swimming Unions of the Americas).

NATIONAL SOCIETIES—SPORTS AND MEDICINE

Amateur Athletic Union
Chairman, Sports Medicine Committee.
Immediate Retiring Chairman, Junior Olympics Water Polo (founder of age group water polo).
Consultant to Age Group and Masters Swimming Programs.
Board of Directors and Executive Committee.
American College of Sports Medicine
Board of Trustees.
Past Vice-President for Medicine.
Chairman, Sports Medicine Institute Feasibility Ad Hoc Committee.

NATIONAL MEDICAL PROFESSIONAL SOCIETIES

American College of Allergists
Board of Regents.
Co-Chairman, Bronchopulmonary Committee.
American College of Chest Physicians
Board of Governors.
Past Chairman, Committee on Pulmonary Diseases in Children.
Assn. of Convalescent Homes & Hospitals for Asthmatic Children
Board of Directors.
Association of Pediatric Pulmonary Centers
President.
Chairman, Legislative Committee.
National Cystic Fibrosis Research Foundation
Chairman, Legislative Committee.

SCIENTIFIC PUBLICATIONS AND ACHIEVEMENTS

Editor, *International Symposium on Effects of Altitude on Physical Performance*, Athletic Institute, 1967.
Author, 4 teaching manuals.
Author, 4 chapters in medical textbooks.
Author of 100 scientific articles.
Lecturer (approximately 60 scientific presentations per year).
Editorial Board, Journal of Asthma Research.
Inventor, Goddard-Bennett-Lovelace Infant Hand Resuscitator.

PAST SCIENTIFIC MEDICAL POSTS

Major, CWS-Associate Pathologist, Medical Research Division of Chemical Warfare Service, Edgewood Arsenal, Maryland, 1942–48.

Instructor, Department of Pharmacology, College of Physicians and Surgeons, Columbia University, 1949–52.

Consultant, University of Chicago Toxicity Laboratories, Atomic Energy Commission, 1950–51.

AWARDS, GRANTS AND HONORS

Who's Who in the West, Who's Who in New Mexico.

Outstanding Civic Leaders of America.

Robins Award for Outstanding Community Service of Physician, 1962.

United States Junior Chamber of Commerce, One of America's 12 Physical Fitness Leaders Award, 1964.

Helm's Athletic Hall of Fame, April 1967.

Grantee: Pulmonary Function Studies in Infants and Children (NIH) 1955–70 Pediatric Pulmonary Center of the Regional Medical Program, 1968–73.

[Exhibit F]

A PARTIAL LIST OF PUBLICATIONS BY ROY F. GODDARD, M.D.

"Bronchopulmonary Diseases in Infants and Children: The Physiologic, Pathologic and Clinical Relationships", Chapter 47, pp. 724–743, Clinical Cardiopulmonary Physiology, New York, Grune and Stratton (1960).

"Pre-Emphysema in Children. Its Recognition and Treatment", Ann. Allergy 19: 1125–1138 (1961).

"Infant Resuscitation", Chap. 4 in Advances in Cardiopulmonary Diseases, Vol. 1, pp. 70–86, Yearbook Medical Publishers, Chicago (1963).

"Breathing Exercises for Children with Chronic Respiratory Diseases", Lovelace Clinic Review 1: 159–164 (1963).

"Report on Medical Tests Conducted at the October 1965 Little Olympics", included as one of 31 reports to the United States Olympic Committee, (October, 1965).

"Respiratory Problems and Related Allergies in Children", Lovelace Foundation Manual 1; pp. 1–40 (1966).

"Chronic Respiratory Problems in Children", supplement to Lovelace Foundation Manual 1; pp. 41–49 (1966).

"Medical Observations on Swimming Competition at Mexico City", Swimming Technique 3: 37–38 (July, 1966).

"United States Olympic Committee Swimming Team Performance in International Sports Week, Mexico City, October 1965", Chapter 25, Proceedings on the Effects of Altitude on Physical Performance, pp. 135–147, Athletic Institute, Chicago, Illinois (March, 1967).

Proceedings of the International Symposium on the Effects of Altitude on Physical Performance (208 pages, 30 chapters, by multiple authors), Athletic Institute, Chicago, Illinois; edited by Dr. Goddard (March, 1967).

"The Effects of Altitude on Physical Performance", Swimming Technique 4:42 (July, 1967).

"Inhalation Therapy for Infants and Children", Lovelace Foundation Manual 2, pp. 1–68 (1968).

Goddard, R. F., and Luft, U. C., "Pulmonary Function Tests for Infants and Children", Lovelace Foundation Manual 3, pp. 1–36 (1969).

"Objectives of Age Group Swimming (a report to National AAU, including Advantages and Disadvantages of Age Group Swimming Programs, Proposed Design of Age Group Programs and Recommendations) (December, 1970).

"Youth Has Emphysema, Too", an interview in *Medical World News*, (April 3, 1970).

"Inhalation Therapy for Infants and Children", *Modern Medicine*, Vol. 38, No. 9, pp. 90–95, (May 4, 1970).

"Sports Medicine—A Panacea for Athletes?", Amateur Athlete, Vol. 41, No. 5, pp. 24–27, (May, 1970).

"Pre-Surgical Evaluation of the Allergic Child Undergoing Surgery", in *Surgery and the Allergic Patient*, Claude A Frazier, ed., Charles C. Thomas, Springfield, Illinois (1971).

"Objectives and Goals for Masters Swimming Programs", (a report to the National AAU) (October, 1971).

"The Physiological Effects of Exercise", (a report to the National AAU) (October, 1971).

"Respiratory Diseases—Children with asthma and other respiratory problems should be treated today for 'tomorrow's life', says doctor", an interview in *The Houston Post*, (November 12, 1971).

"Pulmonary Diffusing Capacity in Healthy Children", *Clinical Research*, Vol. 20, No. 2, February, 1972.

Instructions for Postural Drainage for the Home Care of Babies and Children Who Have Breathing Problems, Lovelace Foundation Manual 4, pp. 1–34 (1972).

OTHER REFERENCES CITED IN THIS TESTIMONY

"Drugs and the Athlete", Cooper, Donald L., JAMA, 221: 1007–1011, (August 28, 1972).

"Drug Use & Abuse in Athletes", Boyer, John, Amat. Athlete, Vol. 42, p. 20 (1971).

Senator BAYH. Gentlemen, you have been very kind. It is almost 6 o'clock, and I appreciate not only your contribution, but the rather significant inconvenience you have been subject to, and I apologize for putting you through that.

We will recess these hearings pending the call of the Chair.

[Whereupon, at 6 p.m., the subcommittee recessed, subject to the call of the Chair.]

APPENDIX

(Additional materials submitted for the Record)

(A) DRUG ABUSE AND SPORTS—NATURE AND EXTENT OF THE PROBLEM

APPENDIX 1

[From Sports Illustrated, June 23, 1969]

DRUGS IN SPORT—PROBLEMS IN A TURNED-ON WORLD

(By Bil Gilbert)

The pill, capsule, vial and needle have become fixtures of the locker room as athletes increasingly turn to drugs in the hope of improving performances. This trend—one that poses a major threat to U.S. sport even though the Establishment either ignores or hushes up the issue—is explored here in Part I of a series.

Among the less startling assertions one could make today would be that we live in a drug culture. The vast majority of us gobble an aspirin here, gulp an antibiotic there, whiff a decongestant now or a few milligrams of nicotine then. We take a little opiate in our cough syrup, a jab of Novocain from the dentist, caffeine to start the day, alcohol to mellow it and a sedative to blank it out at bedtime. However, after it has been admitted that most citizens dope themselves from time to time, there remain excellent grounds for claiming that in the matter of drug usage, abletes are different from the rest of us. In spite of being—for the most part—young, healthy and active specimens, they take an extraordinary variety and quantity of drugs (*see cover*). They take them for dubious purposes, they take them in a situation of debatable morality, they take them under conditions that range from dangerously experimental to hazardous to fatal. The use of drugs—legal drugs—by athletes is far from new, but the increase in drug usage in the last 10 years is startling. It could, indeed, menace the tradition and structure of sport itself.

To begin, consider some examples of the role drugs have come to play in sport:

"A few pills—I take all kinds— and the pain's gone," says Dennis McLain of the Detroit Tigers. McLain also takes shots, or at least took a shot of cortisone and Xylocaine (anti-inflammant and painkiller) in his throwing shoulder prior to the sixth game of the 1968 World Series—the only game he won in three tries. In the same Series, which at times seemed to be a matchup between Detroit and St. Louis druggists, Cardinal Bob Gibson was gobbling muscle-relaxing pills, trying chemically to keep his arm loose. The Tigers' Series hero, Mickey Lolich, was on antibiotics.

"We occasionally use Dexamyl and Dexedrine [amphetamines]. . . . We also use barbiturates, Seconal, Tuinal, Nembutal. . . . We also use some anti-depressants, Triavil, Tofranil, Valium. . . . But I don't think the use of drugs is as prevalent in the Midwest as it is on the East and West coasts," said Dr. I. C. Middleman, who, until his death last September, was team surgeon for the St. Louis baseball Cardinals.

After suffering a shoulder injury during the second quarter of the 1969 Sugar Bowl game, Arkansas Quarterback Bill Montgomery went to the sidelines, got a needleful of painkiller in the joint and came back to complete 11 passes and beat Georgia. "The shot helped," said Montgomery. "My shoulder didn't hurt bad until the shot began to wear off in the fourth quarter."

"Give me two sleeping pills," said Los Angeles Laker star Jerry West to his trainer following the first game of the 1969 NBA championships in which West scored 53 points against the Boston Celtics.

On Oct. 24, 1968 in Grenoble, France, Jean-Louis Quadri, 18, a soccer player, dribbled toward the opposing goal. However, before he could get off his shot he collapsed on the field. He was dead on arrival at the Grenoble hospital. An autopsy indicated he was heavily drugged with amphetamines (pep pills). On Nov. 3, 1968, also in Grenoble, 23-year-old Yves Mottin was the surprise winner of a regional cross-country bicycle race. Two days later he died, and again amphetamines were a contributory factor. On Feb. 5, 1969 two French cyclists, Paul Barnay and Michel Fayolle, were indicted in a Grenoble court where they admitted having furnished Mottin with fatal drugs, which they had smuggled into France from Italy.

Amphetamines were among the drugs banned for use by athletes in the 1968 Olympic Games, and for which post-event testing was conducted. A U.S. weight lifter, who admitted most of his colleagues took a few amphetamines before competing in order to get that extra little lift, was asked how the Olympic ban affected performance. "What ban?" he asked blandly. "Everyone used a new one from West Germany. They couldn't pick it up in the test they were using. When they get a test for that one, we'll find something else. It's like cops and robbers."

"Are anabolic steroids [a male hormone derivative that supposedly makes users bigger and stronger than they could otherwise be] widely used by Olympic weight men?" rhetorically asks Dave Maggard, who finished fifth in the shotput at Mexico and is now the University of California track coach. "Let me put it this way. If they had come into the village the day before competition and said we have just found a new test that will catch anyone who has used steroids, you would have had an awful lot of people dropping out of events because of instant muscle pulls."

Dr. H. Kay Dooley, director of the Wood Memorial Clinic in Pomona, Calif., is well known among athletes as one of the few physicians who openly endorse use of anabolic steroids. "I don't think it is possible for a weight man to compete internationally without using anabolic steroids," says Dr. Dooley. "All the weight men on the Olympic team had to take steroids. Otherwise they would not have been in the running." Dr. Dooley was one of the physicians in charge of medical services at South Lake Tahoe, the 1968 U.S. Olympic high-altitude training camp. "I did not give steroids at Tahoe," says the California physician, "but I also did not inquire what the boys were doing on their own. I did not want to be forced into a position of having to report them for use of a banned drug. A physician involved in sports must keep the respect and confidence of the athletes with whom he is working.

On Sept. 13, 1968, Mike R. Breckon, manager of the Canadian national cycling team then preparing to race in Greece, gave team members a memo telling them how and when to take two drugs that were supplied in a separate packet. Breckon closed his instructions with the remark, "You will no doubt note that very small amounts of strychnine are contained in both these preparations. Don't get the wrong idea that the substance is poisonous. . . . It is on the forbidden list of substances in the CCA [Canadian Cycling Association] rules concerning the use of stimulants, but as you will not be taking it during the race and it is being administered to you under prescription by a doctor, there is no problem."

"It is not unusual for an athlete to carry his own little kit with hypodermic syringes. Athletes have learned to inject themselves," says Harold Connolly, U.S. Olympic hammer thrower. "Some track athletes," says Russ Hodge, a U.S. decathlon man, "spend $30 or $40 a month on pills, steroids and food supplements."

Four years ago George Richey, a tennis pro and father of tennis internationalist Cliff Richey, withdrew his son (or got him fired), from the U.S. Davis Cup team because, among other things, Cup Captain George MacCall had wanted to treat young Cliff's sore thumb with a drug called DMSO. DMSO was at that time widely used. It was believed to be a wonder cure for every athletic ailment from cauliflower ear to tennis thumb. A wonder cure it wasn't. In November 1965, the Food and Drug Administration restricted the use of DMSO to controlled clinical testing on the grounds that 1) its use had gotten out of hand, 2) its effectiveness was questionable and 3) its possible dangers had not been determined.

Such a collection of pharmaceutical vignettes can be expanded at will, but while the amount and kinds of drugs used in sports are impressive, the important difference between athletic and nonathletic drug use comes down to a matter of motive. An athlete takes—or is given by his supervisors, medical and otherwise—many drugs that he would not take or be given if he were not an athlete. And the rationale for much athletic drug use is unique, for the drugs are not taken either with the intention or effect of improving or maintaining health, or to achieve a pleasurable sensation, but rather because the athlete or those around him believe he will perform better drugged than undrugged.

For example, the family of hormonal drugs, which are widely known in athletic circles as anabolic steroids, were developed as restorative aids for patients seriously debilitated by age, accident, major surgery or other infirmities. As with any drug, there are risks attendant with their use—in this case, disruption of certain glandular functions, particularly the sexual. However, a physician may reasonably prescribe anabolic steroids to an emaciated 70-year-old man on the assumption that if the drug helps add 10 pounds to his wasted body this advantage will outweigh the risk of decreased sperm production, testicular atrophy or prostate discomfort. On the other hand, there is no conventional medical reason for a healthy 23-year-old, 240-pound shotputter to use the drug. But many do, because they believe the drug will make them bigger and stronger than they are and because they believe they cannot become national or world-class competitors without it. It is their motivation that makes athletic anabolic steroid users unique.

Another example of the same general phenomenon occurs in the case of the broken-legged hockey player. Mid-way through the sixth game of the 1964 Stanley Cup finals against Detroit, Bobby Baun, then of the Toronto Maple Leafs, was hit on the leg by the puck and carried from the rink on a stretcher. In the training room he received an injection of Novocain. His leg was taped, he returned to play, and he scored the winning goal in overtime. The next day it was determined Baun had a cracked right fibula. Nonetheless, he was shot with painkiller and willingly, probably eagerly, took his regular turn on the ice the following day.

Numbing a broken leg and sending the patient out to play hockey is not a treatment any physician would follow with a nonathlete. It may cause complications, but the procedure has no known therapeutic value. It is not conceived as a method of speeding up or improving the knitting of bone. The only motive was to enable a man to play a game that he could not otherwise have played.

There are abundant rumors—the wildest of which circulate within rather than outside the sporting world—about strung-out quarterbacks, hopped-up pitchers, slowed-down middleweights, convulsed half-milers and doped-to-death wrestlers. Nevertheless, it is the question of motive and morality that constitutes the crux of the athletic drug problem. Even if none of the gossip could be reduced to provable fact, there remains ample evidence that drug use constitutes a significant dilemma, not so much for individual athletes as for sport in general. One reason is that the use of drugs in sport leads one directly to more serious and complicated questions. Is athletic integrity (and, conversely, corruption) a matter of public interest? Does it matter, as appreciators of sport have so long and piously claimed it does, that games be played in an atmosphere of virtue; even righteousness? If not, what is the social utility of games—why play them at all? Drug usage, even more than speculation about bribery, college recruiting, spitballs or TV commercials, raises such sticky questions about the fundamentals of sport that one can understand the instinctive reaction of the athletic Establishments: when it comes to drugs, they ignore, dismiss, deny.

"Somebody should speak out on this subject, and speak out strongly," says Dr. Robert Kerlan, until recently the physician for the Los Angeles Dodgers as well as for a number of individual athletes in all sports. "I'm not a therapeutic nihilist," says Kerlan. "Situations arise where there are valid medical reasons for prescribing drugs for athletes. There are special occupational health problems in some sports. However, the excessive and secretive use of drugs is likely to become a major athletic scandal, one that will shake public confidence in many sports just as the gambling scandal tarnished the reputation of basketball. The essence of sports is matching the natural ability of men. When you start using drugs, money or anything else surreptitiously to gain an unnatural advantage, you have corrupted the purpose of sports as well as the individuals involved in the practice."

The view of Dr. Dooley is quite different from that of Dr. Kerlan. In fact, the two men in many ways represent the opposite poles of medical and metaphysical opinion regarding drug use in sports. Nevertheless, both the Los Angeles area physicians share the common belief that this is a serious matter and one that should be aired thoroughly in public.

Dr. Dooley is a wiry, excitable, even pugnacious man, and also a very busy one. His Wood Memorial Clinic is usually crowded with halt, lame and worried athletes who have come for treatment, information or reassurance. He treats professional, college, high school and even grade school athletes. The majority come from the Los Angeles area, but not a few from other parts of the country, Dooley perhaps being better known among participants than physicians.

"I dont' pretend to be a researcher or a scientist," says Dooley. "I'm a practicing physician who is interested in athletes. A lot of physicians are stuffed shirts when it comes to sports. Athletes do want to perform better, that is what it is all about. If I know of something which may improve performance, a training or rehabilitation technique, a drug that is legal and which I don't believe involves any serious health risk, I see no reason not to make it available to an athlete. I can't see any ethical difference between giving a drug to improve performance and wrapping an ankle or handing out a salt pill for the same purpose. Athletes hear about these things and they are going to get them one way or another."

Between the opopsed views of the two West Coast doctors—Dr. Kerlan's that drug abuse constitutes a growing athletic crisis and Dr. Dooley's that the use of drugs is the sporting wave of the future—there are all shades of opinion and all kinds of fancy hedging and dodging. But there is also one thing that is agreed upon—a greater quantity and variety of drugs are being used now than were used a generation, a decade or even a year ago.

Setting aside ethical considerations for the moment, there are obvious reasons why athletes should use so many drugs. The most obvious is that there are more drugs available these days for everyone than ever before. Furthermore, we have all been sold on the efficacy of drugs. We believe that the overflowing pharmacopoeia is one of the unquestioned triumphs of the age. We have been sold on drugs empirically because we have tried them and enjoy the results. We have been sold by countless magazine and newspaper stories about wonder drugs—many of which later turned out to be less than wondrous—by massive pro-drug propaganda campaigns mounted by pharmaceutical manufacturers, by TV actors dressed in doctors' coats and by real doctors, many of whom are very quick with the prescription pad. Generally, we have accepted rather uncritically the central message of this persuasive pitch—drugs are good for you. These days it is a cultural reflex to reach for a vial, an atomizer, a capsule or a needle if you suffer from fever, chills, aches, pains, nausea, nasal congestion, irritability, the doldrums, sluggishness, body odor, obesity, emaciation, too many kids, not enough kids, nagging backache or tired blood.

It would be surprising if athletes were not influenced by the same needs and tendencies that have the rest of us so high on drugs. A Pepper Martin, if plunked in the ribs by a Schoolboy Rowe fastball in 1934, would have trotted down to first base without doing anything about his injury because (1) there was nothing he or anyone else knew to do about it, and (2) he would have thought it a little sissified to have taken medicine for a bruise. In 1969 when a hitter catches one in the side, the game is likely to be stopped while he is sprayed with ethyl chloride to freeze the area, takes an enzyme or (if his medical attendant has come by some on the black market) has some DMSO slathered on the bruise. If he is a particularly sensitive jock he might even take a sedative or a painkilling pill. All this is done, and even demanded, because such aids are available and the consensus is that it is the smart, scientific, modern thing to use them.

On the other hand, if you fell down the front steps and bruised your ribs, you would not use ethyl chloride, an enzyme or DMSO. Athletes do because they have far more access to drugs than most of us. They do not have to stand around in waiting rooms, at pharmacy counters or on street corners for their fixes. Drugs are brought to them and usually provided free of charge. The athlete gets free professional advice from physicians and assisting trainers as to what drugs to take, and when and how. Of all vocational groups, athletes are probably under the closest medical supervision. While physicians and trainers will often bridle at the suggestion (drug has become a four-letter word for them as well as others), the general pattern seems to be that the more closely one is associated with the medical profession the larger one's drug consumption is likely to be. Increasingly a major role of athletic medicine men is to keep the athletic Establishment informed about what drugs can be used to what advantage, and to serve as drug dispensers. Most drugs—good and bad, safe and risky, effective and ineffective, legal and illegal—used by athletes are supplied directly by physicians or indirectly by physicians through trainers. If drug usage in sport is a developing scandal, then it is a scandal that involves the medical Establishment as well as the sporting one.

"Exuberance, our own exuberance, is something we physicians in sports have to guard against," says Dr. John Finley, a team physician for the Detroit Red Wings. "Most of us work with teams as sort of a labor of love, because we are fans. I know I am. I root hard for the Wings. I'm trying to think of what I can do to help them win. Maybe there is a drug that will help. I try to watch myself, not let my emotions influence my medical judgment, but it is something to keep in mind."

"I obviously don't care to be quoted," says a New York physician close to the sporting scene. "However, as a generality, team physicians tend to be men of action, not scholarly, speculative types. They are interested in immediate problems: making somebody strong, relaxed, mean or quick and in getting a player back in the game as soon as possible. If somebody tells them there is a drug that might do the trick, they are apt to try it. They are not likely to wait around for a double-blind control study to find out if the drug is effective or what it will do to the liver three years later. They are interested in today."

"Quackery. That is the bane of sports medicine," says Dr. Daniel F. Hanley of Bowdoin College, Me., who has been a physician for three U.S. Olympic teams. "We've rid ourselves of some of the worst, but there are still too many people handing out get-good-quick pills, touting machines that send out blue sparks and make big muscles or advising athletes to drink superduper seaweed extracts. There is a time and place for certain drugs in sports, but each situation has to be evaluated individually. For example, I was with the Pan American team in 1967. One of our wrestlers, Wayne Baughman, a middleweight, severely pulled a muscle in his chest during a semifinal bout, which he won. He was in a lot of pain, virtually incapacitated. Before the finals I injected Novocain and taped him, and he won the gold medal. I am normally opposed to this type of treatment. I would never use it in high school or college competition. But this was a special case. The injury did not involve a weight-bearing area, such as a knee or ankle. There was little risk of aggravating the injury. And Baughman was a grown man competing for an international gold medal, an opportunity he might never have again. You balance risk against reward."

"Could he have wrestled without the shot?"

"No, he could hardly stand up," recalled Dr. Hanley.

"Sure, you can defend that," says Joe Kuczo, veteran head trainer of the Washington Redskins and Georgetown University upon being told of the Baughman incident. "You do things in the big game you might not do otherwise. But the catch is that everything is getting to be a big game. The one you win or lose in September is just as important as the one in November. A pro football training camp used to be a fairly relaxed place. Now they are banging a week after they get there. What goes on in July or August is real important to a rookie trying to make the team or to an older fellow struggling to last one more year. The coaches get worked up to the point that it is a life or death matter whether Joe Zilch is ready for a Tuesday practice," says Kuczo.

While his own exuberance or ignorance may cause a physician to recommend or permit questionable drug practices, he is by and large immune from outside pressures in the matter. An obvious reason is that most team physicians are not financially dependent upon their sports medicine practice. Therefore, short of withdrawing his complimentary passes, there is not much leverage a player, a coach or even an owner can exert on a physician to give, say, Benzedrine if he doesn't want to. But the situation with trainers is quite different. They are full-time employees of the club and usually paid less than the lowest-salaried player or coach. They lack a physician's authority and status. They are with athletes and coaches every day, all day, while physicians are not. They have, or are thought to have, the keys to the drug cupboard. For most physicians the problem of ethical drug use is an academic one, like that of virtue in a nunnery, their principles never being seriously challenged. Trainers, on the other hand, work in the athletic streets, and they are frequently tested.

"I know of a case," says Gene Donnelly, trainer for the Anaheim (Calif.) High School athletic department, "where a coach came to his trainer with Novocain and a needle. He had this hotshot halfback, a high school kid, with a real bad ankle. The coach did not have guts enough to ask the doc to give the shot, but he wanted the trainer to stick a needle in that ankle. The kid could really have been hurt, it was that bad. He might have been finished for good in sports."

"And what did the trainer do?"

"In that case," says Donnelly, "he told the coach to go to hell. He said he didn't need any job that bad."

Not so long ago a trainer for a large, athletically prestigious university quit or was fired, depending upon who is telling the story off the record. The trainer's version is that a new football coach coming to the institution brought along with assistants and playbooks a contraband supply of DMSO. The trainer was not consulted or informed about the drug. The coach simply administered it himself. By and by, the trainer was looking for a new job.

"I had this kook who coaches or does something with a girls' track club come up to me," says a West Coast trainer. "He's got these kids—grade school and high school girls—running in little two-bit AAU meets. He wants to see if I can get him Benzedrine. Can you believe it? I told him if I had a daughter I'd punch him in the mouth. Maybe I should have anyway."

An example of how athletic pressure, ambition or maybe just ignorance at a sub-medical level can result in what charitably can be called dubious drug practices occurred a few years ago at the training camp of the San Diego Chargers. The story was told by Dave Kocourek, now an offensive end for the Oakland Raiders, but then a member of the Charger team.

"I guess this anabolic steroid business must have started on the Chargers around 1963 or right in there somewhere. One guy I can remember who got involved was Howard Kindig. He came to us as a highly touted center and linebacker from Los Angeles State. He was long and lean and very quick, and they wanted to put weight on him, so in addition to using the weight program run by our weight coach, Alvin Roy, they started pumping him full of Dianabol [a popular anabolic steroid], and sure enough he gained about 30 pounds.

"They were also passing out the stuff to the rest of us. They called it just 'pink pills.' We started taking it as a matter of course, but I wasn't too keen on the idea because I've never been much for this sort of thing—even the weight program. But, since I was the player representative, one day I asked Alvin and Sid Gillman, our coach, if the team physician had okayed these pills. They gave me sort of a vague answer. I don't remember what the answer was, but I do remember that it didn't satisfy me. As it happened, I lived next door to a physician and I asked him about anabolic steroids.

"The doctor told me, 'Listen, Dave, I don't think these things were intended for people who do the kind of work you people do. I think they were made for Milquetoast-type guys, people who sit in chairs all day long and never get a chance to build any healthy muscular tissue.'

"I told the other guys this and a lot of them quit taking them. Don't get me wrong. It wasn't ever any great big deal, or any cause for rebellion or mutiny. But a lot of the fellows just started throwing them away."

Kindig says he was still a student at Los Angeles State when the Chargers gave him Dianabol. He took the pills until his own doctor advised him that they might be dangerous.

"I didn't take them regularly," says Kindig, "but some other Chargers were taking them; Earl Faison and Ron Mix, I remember."

The hassle in the Chargers' camp might be viewed as an example of innocent athletes resisting the advances of higher-up drug pushers, but such situations are rare. Generally, as Dr. Dooley says, modern athletes know a lot about drugs, or at least have a lot of opinions about them, and are willing to experiment with drugs about which no one knows very much. There are probably as many cases of athletes demanding drugs from trainers and physicians as physicians and trainers ordering athletes to take them.

The whole matter has been succinctly summarized by Hal Connolly, a veteran of four U.S. Olympic teams.

"My experience," says Connolly, "tells me that an athlete will use any aid to improve his performance short of killing himself."

Information about new drugs for athletics, new athletic uses for old drugs and where to get and how to use exotic pills and shots, flows into the sports world from above, from medical meetings and publications, as a result of shoptalk between coaches, trainers and physicians and because drug men are actively pushing their preparations. However, it also wells up from below, because there is an athletic communications network of sorts that connects the locker rooms of the world.

While no sport has a monopoly on drug use or curiosity about drugs, in this country weight lifters and trackmen seem to be natural, eager couriers for information about get big, well, fast or mean pills and shots. There are several reasons for this. Trackmen and weight lifters compete in individual sports. They are among the most introspective of athletes, figuratively spending a lot of time watching their navals and literally watching their weight, muscle tone, respiration, pulse, bruises, strains aches and psyches. Therefore, they tend to be especially susceptible to any suggestion that there may be some secret aid—animal, vegetable or mineral—that will jazz up their vital functions. In addition, they are cosmopolitan, competing all over the world, and thus able to trade more inside dope, so to speak, than stay-at-home football and baseball players can.

The case history of the anabolic steroids, drugs that 10 years ago were almost unknown to American athletes but now are used and/or gossiped about in virtually every sport, serves as a classic example of how drug fads spread. By his own account, the anabolic steroid pioneer in the U.S. sports world was Dr. John Ziegler, an Olney, Md. physician. In 1960, after hearing that Russian athletes were using hormones to "bulk up," Ziegler, in cooperation with the Ciba Pharmaceutical Company (the maker of Dianabol) began giving these drugs to weight lifters at the York (Pa.) Barbell Club. Dr. Ziegler eventually became concerned about anabolic steroid use. "The trouble was that the York men went crazy about steroids," says the Maryland physician. "They figured if one pill was good, three or four would be better, and they were eating them like candy. I began seeing prostate trouble, and a couple of cases of atrophied testes."

The weight lifters themselves were quickly convinced that anabolic steroids made them bigger and stronger and began to tout the drugs. (Some doctors were—and are—far less sure about their strength-building characteristics.) Track weight men were early converts. By the mid-1960s most of the top-ranking weight men had tried anabolic steroids, including Randy Matson (who used them while preparing for the 1964 Olympics), Dallas Long, Hal Connolly, Bill Toomey and Russ Hodge. Footballers, many of whom are as interested in trying to make themselves as big and strong as any weight lifter or shotputter, were also obvious anabolic teroid candidates. Though the Chargers' experiment may have been a bit abortive, the drug has since caught on in football. It is an assumption, based on reasonably good but unverifiable reports, that some players on almost every NFL and AFL team have used anabolic steroids. It is a fact, according to physicians or players, that, in addition to the Chargers, members of the Kansas City Chiefs, Atlanta Falcons and Cleveland Browns have taken the drug. Ken Ferguson of Utah State University, who went on to play professional football in Canada, has said that 90% of college linemen have used steroids. "I'd say anybody who has graduated from college to professional football in the last four years has used them," said Ferguson in 1968. So widespread is the faith in hormones that there are verified incidents where pro scouts have supplied the drug to college draftees, and college recruiters have given it to high school players.

In this matter of how and why drug habits get started, the case of the anabolic steroids is far from unique. There are many other drugs—amphetamines, strychnine, cocaine, morphine, DMSO, tranquilizers, barbiturates, vasodilators, painkillers, anti-inflammants, enzymes, muscle relaxers—that have enjoyed sudden athletic popularity and whose use has spread quickly through the sporting world, despite official dampening admonishments.

Medicine and science aside, an underlying reason for this is that athletes and their attendants are flaming faddists. The sports world is full of fetishists, gamesmen who swear by the efficacy of nuts, raisins, pancakes, dirty undershirts, voodoo rituals, numbers, words, coins and medals. There is a rational explanation for this irrational belief in magic. More than perhaps any other group, the reputation and salary of an athlete depends on luck, a puddle of water, a gust of wind, a bounce of a ball. It is therefore understandable that athletes should be quick to experiment with any available magic potions.

Vitamin B-12 injections are an example of the athletes' craving to have magic worked on them. Professional football players are among the most devout B-12 believers, and there is many a Sunday hero who would no more go out to battle without having his shot than he would without his cleats. Athletes (football players are not alone, B-12 shots being fancied by baseball, basketball, track, swimming, hockey and weight lifting performers) believe that the shots prevent cramps, muscle pulls and general fatigue, cure hangovers and give you the jollies. The opinion among medical professionals is almost unanimous that the only real therapeutic use of B-12 is as a corrective for pernicious anemia. Otherwise it has little if any effect, since excess B-12 is quickly eliminated from the system. "American athletes have the most expensive urine in the world," says Ray Baldwin, trainer at Xavier University and formerly with the Cincinnati Royals.

By bringing together athletes from all over the world and dumping them into the most formidable sporting pressure cooker yet devised, the quadrennial Olympic Games have traditionally (it took four physicians to revive the marathon winner of the 1904 St. Louis Olympics, an American, Tom Hicks, who proved to be loaded on strychinine and brandy) served as an exchange for drugs and drug recipes. This was particularly true in 1968, when everyone's attention was forcibly fixed on drug usage by the new anti-doping regulations and dope-detection test instituted by the International Olympic Committee.

Shoe money and drugs were the two hottest conversational topics in the Olympic Village. A West German super steroid was much discussed. Olympic scuttlebutt also had it that African runners chewed kat, an anciently used herb from the Red Sea coast which supposedly masks fatigue, increases endurance and turns on the libido. An extract from the Tree of Life (a Korean bush) was rumored as being used for the same purposes. Bill Toomey believes one of his chief rivals in the decathlon had a shot of anti-inflammant (illegal according to Olympic drug rules) in his elbow prior to making a mighty javelin heave. "I did not see it, but a British coach said he saw it," says Toomey. The Russians, according to Americans, had a new wonder, anti-tension, pro-concentration pill. Some East Europeans were said to be taking a caffeine concentrate as a pick-me-up before competition. This was done presumably because amphetamines, which are traditionally used for this purpose, were illegal, and also presumably because they had not found the undetectable amphetamine that certain weight lifters boasted about having discovered.

An almost universal article of athletic faith is that the other side (the Humpty-Dumps, the Russians, the Jones Junior Highs) is 1) usings and 2) getting drugs that are better than our drugs. The oftentimes bitter confrontation between the United States and Communist teams has understandably produced a lot of such feelings. "We are usually a long way behind the Russians in drug use," says U.S. Weight Lifter Bill Starr. "They make a scientific study of it. If they come up with something good, their teams all get it. Here it is a hit or miss thing."

But East Europeans believe the same thing about Americans. Foreign athletes find it inconceivable that American athletes, coming from the land of towering pill factories, are not the most thoroughly doped competitors in the world.

The notion that someplace there is a compound, a formula or a food that will automatically convert bronze medals into gold is a general one confined to no one nation, sport or class of competitors. This conviction that there is the athletic equivalent of the philosopher's stone sought by ancient alchemists, and the terrible fear that somebody else may have already found it, is the rationale—or irrationale—behind many of the current athletic drug practices. It is used as a justification by physicians and trainers for prescribing drugs that cannot be justified on conventional medical grounds. It is the excuse used by coaches and trainers ("There might be something in it") for pushing pills the effectiveness and safety of which are unknown. It is the reason athletes carry their own little black drug bags, endanger their health, risk their reputations and break oaths and laws to get and use bizarre pharmaceuticals. It explains the ever-multiplying rumors about records being set and games being won by doped competitors. Finally, the belief in the existence of the ultimate pill, and the unrelenting search for it, is why many doctors share Dr. Kerlan's fear that athletic drug practices are leading to a sports scandal of major proportions.

[NEXT WEEK.—An analysis of sport's medicine chest: who takes what, the results they seek and why the effects are suspect and the hazards great.]

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DRUGS IN SPORT: PART 2—SOMETHING EXTRA ON THE BALL

(By Bil Gilbert)

Be it pick-me-ups or let-me-downs, build-me-ups or lie-me-downs, they can all be found in medicine's little black bag for sportsmen. It is into this bag—and into the dangerous world of drugs—that athletes plunge when they search for . . .

"Where's the Dexamyl, Doc" I yelled at the trainer rooting about in his leather valise, pitcher-author Jim Brosman quoted himself as saying in his celebrated baseball book, *Pennant Race*. " 'There's nothing in here but phenobarbital and that kind of stuff.'

" 'I don't have any more,' said Doc Rohde. 'Gave out the last one yesterday. Get more when we get home.'

" 'Been a rough road trip, huh, Doc? How'm I goin' to get through the day then? Order some more, Doc. It looks like a long season.'

" 'Try one of these,' he said.

" 'Geez, that's got opium in it. Whaddya think I am, an addict or something?' "

An addict or something? It isn't the worst question in the world, though the word addict has an opium, cocaine, speed, heroin whiff to it that is not normally associated with the pills and shots that an athlete uses to bolster his physical condition or morale in the name of victory, a payday, or both. The difference is that addicts, in the normal usage of the word, take drugs because their systems are dependent on them, while athletes take them for a more specific purpose. Their goal is performance, but their quest for performance has led them deep into the wonders of the pharmacy. What do you find if you dig into the medicine cabinet of sport? Who is taking what and why? The answer is that most athletes are taking something, and probably not getting quite the results they think.

Essentially, the drugs used by athletes can be broken down into two categories—restorative and additive. Restorative drugs are those used by athletes who for one reason or another—illness, injury, pain, nervousness, sloth, gluttony, dissipation—are incapacitated. The drugs are given with the intent to restore, at least partly, the competitor's normal prowess. Painkillers, tranquilizers, barbiturates, anti-inflammants, enzymes and muscle relaxers are all restorative drugs commonly used in sports.

Additive drugs—a more controversial group—are used with the motive of stimulating performance beyond the natural limits, *e.g.*, in the hope of making a man who has never run better than a four-minute mile cover the distance in 3:59 or even 3.55. For obvious reasons, additive drugs raise more legal ethical and regulatory questions than do the restoratives. They are also physiologically controversial, since there is some scientific doubt as to whether there is such a thing as a *truly* additive drug. The athletic Establishment, however, is generally convinced that additive drugs do exist and, in this belief, uses compounds that stimulate the nervous system, affect muscle tissue and alter the personality.

Given the variety of drugs now available and the inclination of athletes to experiment with them, it is all but impossible to compile a definitive list of drugs that have been used in sports for restorative or additive purposes. Also, because of the speed with which drug information is passed among athletes, drug use cannot be neatly cataloged as to sport, *e.g.*, alcohol for archery, Benzedrine for basketball, cocaine for crew, etc. Athletic pharmaceutical practices are, so to speak, interdisciplinary, and perhaps the only orderly way to survey athletic drug usage and the effects of drugs on sport is to examine half a dozen or so drug families now popular.

A reasonable place to begin is with the additives, the best-known of which are the amphetamines, a group of synthetic drugs that are chemically similar to adrenalin and are often referred to as pep pills. On good evidence—which includes voluntary admissions by physicians, trainers, coaches athletes testimony given in court or before athletic regulatory bodies and autopsy reports—amphetamines have been used in auto racing basketball (at all levels down to children's leagues), boxing, canoeing, cycling, football, golf, mountain climbing, Roller Derby, rodeo, Rugby, skating, skiing, soccer, squash, swimming, tennis (both lawn and table), track and field, weight lifting and wrestling. The amphetamines of which Benzedrine, Dexedrine, Dexamyl (which has a barbiturate added) and methamphetamine (the notorious "speed" or "Meth"), are among the best-known, affect the central nervous system and produce what might be called a triple threat. They act indirectly to suppress hunger spasms, and for this reason are used as appetite-killing pills by jockeys, boxers, wrestlers and anybody else who has to make a weight. The drug is a metabolic stimulant, speeding up the respiratory and circulatory systems and enabling users to remain hyperactive when they would ordinarily slow down because of fatigue. Finally, the amphetamines act directly on the brain, including a sense of excitement and euphoria, a sort of I-can-lick-the-world high.

But the undesirable side effects of amphetamines are numerous. The drug is feared to be physically addictive—there is some medical dispute about this—and is certainly physchologically addictive. Overdoses or too frequent doses can cause, among other things, cardiovascular collapse, cerebral hemorrhage, brain lesions, paranoia, ulcers, nutritional problems, compulsive talkativeness, irritability, aggressive behavior and constipation. In addition, an amphetamine hangover, coming down from a high, is a wretched, depressing experience.

Though amphetamines were developed earlier, their use first became general during World War II, world war being a happening that creates an instant demand for hyperactive, aggressive and even paranoid types. Returning veterans brought the drug to the sports world, where its use has been widespread ever since. As in the military, it was and is touted as a fatigue chaser and stimulant. Therefore it is most heavily used in endurance sports. Not surprisingly, bicycle racing, often cited as the most grueling of all athletic contests, is the most notorious for amphetamine use.

"I dope myself. Everyone [that is, everyone who is a competitive cyclist] dopes himself. Those who claim they don't are liars," Jacques Anquetil, a five-time winner of the Tour de France and a French sports figure of the stature of a Jean-Claude Killy or a Michel Jazy, has said. "For 50 years bike racers have been taking stimulants. Obviously, we can do without them in a race, but then we will pedal 15 miles an hour [instead of 25]. Since we are constantly asked to go faster and to make even greater efforts, we are obliged to take stimulants."

Anquetil's remark was made in the summer of 1967 in the midst of what to date has been sports' messiest public drug scandal. Anquetil himself was much involved, both as a commentator and competitor. In May 1966, after winning a race in Belgium by nearly five minutes, he forfeited his victory and his check rather than provide a urine sample, which was to be analyzed for amphetamines or other banned drugs. In September 1967 a world speed record set by Anquetil in Milan was disallowed for the same reason. In between these two incidents there were two cycling deaths attributed to amphetamines, a number of suspensions at the Amsterdam world championships and a slowdown strike by cyclists protesting the fact that they were being forced to compete without the aid of their accustomed drugs.

The furor did not arise because cyclists had suddenly begun using drugs but because drug practices were so abusive that various European political and sporting agencies could no longer overlook them as they successfully had for years. In Italy, where drug usage was once estimated at almost 100%, the late Fausto Coppi, a professional champion, had remarked, "One day I will take the wrong pill and pedal backward." And Tom Simpson, the best English professional cyclist of his day, said in 1966 in defense of amphetamines, "When you get up in the morning do you need a cup of coffee to get started? Well, after cycling 150 miles the day before, we might need three or four coffees."

A year later, in the Tour de France, Simpson's "coffee" caught up with him. The 13th lap of the race was a brutal one, involving a 6,000-foot climb up a mountain in 90° heat. Simpson felt badly at the start, telling friends that he had been too "nervous" to sleep. A mile from the summit of the mountain he began zigzagging across the road and finally collapsed in a coma. He was dead on arrival at the nearest hospital. An autopsy showed that Simpson was heavily drugged with methamphetamine, a vial of which had been found in his pocket at the time of his death.

In 1965 Belgium and France passed tough anti-dope laws, but dangerous though the amphetamines are, there has been no letup in their use by athletes in the U.S. and not much abroad. Three weeks ago Belgian Cyclist Eddy Merckx, who was leading the Tour of Italy, was disqualified from the race after a test showed he had taken an amphetamine-type drug. The underground consensus is that amphetamines have been tried in most endurance events, and there is enough evidence to make the rumor credible. Joseph Rombaux, a Belgian marathoner, was deprived of his national title in September 1968 after a positive amphetamine test, and long-distance runners—after vows of secrecy have been sworn—sometimes admit to being big benny men. Soccer players in England, Italy and Brazil have been tested and found to have used the drug or else admitted using it. Wayne Le Bombard, an Olympic speed skater (as well as an Olympic cyclist) from West Allis, Wis., says, "The bennies are generally frowned on, but they're also pretty generally used. Not with a needle; I don't know of any skater who goes that far. But there are a lot of pills." A British physician, Dr. John Williams, found that amphetamines were used by British cyclists, rowers, tennis and squash players. (A three-time British squash racquets champion of the early '30, Don Butcher, was affectionately known as the Benzedrine Kid.)

Among major American sports, amphetamine usage may be highest in football, or again it may only be easier to verify in this sport. Among professional clubs, players, physicians and trainers of the Steelers, Chargers, Cardinals, Lions and Redskins have indicated that chemical pep is or has been used. At least one professional football team made the taking of pep pills part of its pregame routine. "It usually seems to be the older players and boys who think they need an extra lift to make it through a game that want them," says Joe Kuczo, the Redskin trainer. "I personally am not convinced that they do much good, but it's a mental thing with some of them. They've been used to the pills. In the quantities they get here, at least, I doubt if they do much harm."

"It's like beating a dead horse," says Porky Morgan, Kansas State University trainer, who confirms Kuczo's opinion about amphetamine use. "All they do is mask fatigue, they don't eliminate it."

One old hoss who had his fatigue well masked this past season was a veteran pro linebacker and amphetamine user who does not wish to be identified for his accomplishments in the latter field. He recalls the game midway through the professional season when he took his usual pregame dose of bottle happiness, then became preoccupied and took a second dose. "I was bouncing all over the field," he said later. "I was running and jumping along the sidelines hollering, 'I'm a superplayer, they can't block me. No one can block me.' It was really funny. I knew I was saying it, but I just didn't care." Observers of the game reported that Mr. X's play was strong if not super.

"Sure I took them in college," says George Connor of Notre Dame and Chicago Bear fame. Connor is not more wicked, merely more frank than most. "I understand after you take them for awhile they don't do anything for you. And if everybody is taking them, what do you gain?"

In some athletic quarters there is a feeling that more pep pills are used by high school players than any others, because teen-agers are more with the drug scene than their elders and because high school coaches and trainers are less well trained or less scrupulous. However, proof of such an assumption is very circumstantial. A high school basketball coach in Ohio was once fired for giving his players amphetamines. The lockers of the Anaheim and Downey, Calif. football teams were searched last fall for pep pills. A trainer at a Southern university says, "You cannot quote me, and I will not give you the name of the high school, but there is one in Alabama that definitely uses pep pills. I know that this is quite common because I have had freshman athletes come to me and ask for the pills to pick them up for a game."

While a lot of athletes do use amphetamines, there are some who think they have taken amphetamines but haven't. Instead they have received a placebo, a sugar pill, an aspirin or a vitamin, and been told it was a pep pill. The placebo ploy brings up a crucial question, with regard not only to the amphetamines but to many drugs. That is, do they have the expected physiological effect, or is the effect purely psychological? Do amphetamines make an athlete pedal, run, swim, skate, volley, tackle or throw faster, longer or harder than he otherwise could? Though many athletes have staked their reputations, health, and even their lives on the assumption that amphetamines are truly additive, the issue remains in some scientific doubt. There have been half a dozen studies aimed at determining the effect of amphetamines on athletes, yet there are no conclusive results.

But even if the answer is yes, that amphetamines do produce a measurable improvement in immediate performance, the drug may still be detrimental to overall performance. The basis for this judgment is that amphetamines cause, among other things, loss of sleep and appetite. They adversely affect an athlete's ability and willingness to train. Thus it is reasoned that the immediate stimulation—if it occurs—may be more than offset by detrimental long-term effects.

Bob Lundy, trainer for the Miami Dolphins, says, "Amphetamines can do much more harm than good. I've seen them [football players] in a daze when reporting for practice as late as Tuesday after Sunday's game. Others take them and lose their reactions without realizing it. They may know their assignments perfectly before the game. But when they get in there, they don't know what they're doing. So we don't use them."

Another trainer, one who declines to have his name used, says, "Some of the pros need almost a full week to get over getting pepped up for Sunday. Afterward, they must either have tranquilizers or whiskey to bring them down. So they move through a cycle: pepped up, drunk, hung over, depressed and then pepped up again."

It is probably fair to conclude that the majority of medical professionals do not believe amphetamines are beneficial to athletic performance. However, a large number of athletes do believe in pep pills. This is not to say that most athletes use amphetamines—or do not use them. That proposition is simply undocumentable.

For at least the past decade amphetamine has been the stimulant of choice in sports. However, amphetamine is certainly not the only drug that has been used by athletes trying to beat fatigue. Among others that have been tried are: strychnine, cocaine (the Incas who first used such drugs called them the "herbs which make one run"), ephedrine, caffeine and iboyaine, a relatively new entry derived from kat and, reportedly, also from the Korean Tree of Life. But the situation with all of these stimulants is similar to that of amphetamine, the most closely studied of the group. The additive properties for athletic performance remain unproved; the dangers have been proved. The stimulants are medically risky because, like every drug, they are to some degree toxic. They are particularly dangerous for athletes because they artificially increase the strain on various physiologic systems, ones that are already under special stress because of exertion. The drugs also artificially prolong the period of stress by masking fatigue.

Not being keen, high or sharp enough is a fundamental condition that athletes have always tried to compensate for. But there is another absolutely opposite occupational problem that athletes and their handlers face: athletic competition acts like excessive heat on a tempered knife blade—the sharp cutting edge of the instrument is destroyed. The resultant choking up, pressing, nervous tension, call it what you will, is a common sporting ailment and one for which numerous drug cures are now being tried. Some of the names are common enough: Miltown, Nembutal, Equanil, Librium; some not so common: Tofranil, Triavil.

One Sunday noon in Pittsburgh in the dressing room of the visiting Washington Redskins, Dr. George Resta paused in his work of injecting vitamin B-12 into the arms of football players to listen to a loud agonizing retching sound coming from the commode cubicle. "Harris," said Resta annoyedly, like a man who has forgotten to turn off a light in the basement. "We forgot his tranquilizers." Rickie Harris, a defensive back, appeared shortly, looking drawn after having lost his carefully planned breakfast. Resta opened his bag and handed Harris a tranquilizer. After Harris had gone off to deal with his pregame miseries as best he could, Resta said, "There are a few like that. We give them something pretty mild, just to take the edge off. You don't want them so sleepy they get beat on passes."

The use of sedatives, barbiturates, tranquilizers and muscle relaxers (presumably to prevent cramps and tightness) is common in most sports from the college level up. However, unlike the situation with amphetamines, the practice is usually not secretive. Anytime sleeping pills, tranquilizers or relaxants are thought useful by a physician or trainer they are given, and no bones are made about it. One reason for this is that these are restorative drugs, and the never-set-forth ethic of sport medicine is hazier with respect to such compounds than it is with an additive drug such as amphetamine. No one contends that the sedatives increase performance potential beyond normal limits. In fact, it is generally conceded that they have the opposite effect; that because they dull the senses a man under their influence probably does less well than he otherwise would if he were normally free of tension. Nevertheless, the ethical problem is there, as it is with all drugs. The inability of a .200 hitter to deal with pressure is as much a natural limitation for him as the inability of a cyclist to pedal faster than 20 mph. The ballplayer who takes tranquilizers—many do—and the cyclist who pops pep are both trying to get from a drug something that they do not think they naturally have.

Golf is a prime example of a sport in which the struggle against pressure is a major part of the contest. Tension is to golf what the oxygen debt is to a miler, muscle fatigue to a cyclist and pain to a hockey player. It is therefore meaningful that this sport is one of the few in which sedative use is surreptitious and regarded as an underhanded practice. When interviewed at a recent tournament, a number of the touring pros were immediately suspicious of any mention of sedative use, quickly claiming that if—perish the thought—drugs were used, public knowledge of this would be bad for the "image" of the game. However, it was gingerly admitted that maybe a few golfers took a few calm-down drugs, like maybe Tommy Jacobs, Al Geiberger, Dave Hill. When queried, most gave an answer similar to what Doug Sanders, often on the list of the guys-who-do, had to say "I have taken tranquilizers. And Mayo Clinic gave me something to help me sleep, but I seldom take it. I mean practically never. This is not a motion game like football. You've got to be mentally alert. You can't be leaning against a tree that isn't there." What is suggested here applies to all athletic use of barbiturate-type drugs; the trick is in the dosage. You want to feel casual enough to lean against the tree, but you want the tree really to be there. The moral question is something else again.

In addition to exhaustion and tension, all athletes are at some time in some degree challenged by a third physiological phenomenon—pain. The relationship between pain and sports is ancient and close. For some, pain is the prohibitive price that makes games not worth playing; for others it is the secret but ultimate opponent. For most it is a necessary vocational byproduct. Though the image of the athlete as a virile, courageous, uncomplaining pain bearer has been assiduously promoted and popularly accepted, athletes in general fret, worry and complain more about pain than nonathletes. There are several good reasons for this. Games are physical, sometimes violent, and the chances of getting a broken bone, bruise or cut are clearly greater in sports than in less active pastimes. Also, athletes tend to be more dedicated body watchers than most. "They are not just exactly hypochondriacs. They are just exceptionally cautious about their bodies," says Dr. Thomas Silva of the Boston Celtics. The normal athlete will immediately note and be concerned about small throbs, aches and twinges that a nonathlete accepts stoically as just part of being alive. Because he is concerned with physical performance, a very little pain can distract an athlete to a significant degree. An accountant with a sore toe is likely to accept the infirmity silently. The same ailment in a baseball pitcher often will be headline news. The player, in turn, will act as if he were threatened by advanced gangrene, and he can hardly be blamed, since his livelihood may be involved in his sore toe.

Under these unnerving circumstances, it is not surprising that pain control is one of the most common reasons drugs are used in sports. The anti-pain drugs are of two kinds: those that provide a local anesthetic for aches and strains, such as Novocain and Xylocaine, which are usually given by injection, and ethylchloride, which is sprayed on, and those that begin with aspirin and work up to the opiates, which act on the central nervous system. Then there are the potent anti-inflammants such as cortisone and Butazolidin, and the new-banned DMSO.

There is probably not a single sports physician in the United States, including the most conservative, who has not given a pain shot or pill at some time, and there are precious few athletes who have not taken such remedies. The explanation for the practice is the same in every sport. The sermon goes like this: "I give Novocain (or drug X) injections. However, I never give a boy a shot and send him back to play if a weight-bearing joint is involved. Pain is nature's warning, letting the body know something is wrong. If a boy continues to perform on an ankle or knee that has been deadened to pain, he runs the risk of aggravating the injury, disabling himself for a longer time, causing permanent injury or winding up in his 40s with traumatic arthritis."

No physician or trainer says he has ever given a painkiller that created a health risk for the receiver. However, most physicians and trainers, if pressed, admit that some others—often with opposing teams—do inject in this way. They will tell, off the record of course, stories about crippled halfbacks, distance runners hooked on Demerol (a synthetic morphine), pitchers whose elbows have degenerated because of too much cortisone. Obviously there is a mathematical, if not a moral, paradox here. Just as obviously, there is no way to collect testimony that will resolve the paradox—nobody is going to say, "Sure, we ruined

Slug's knee, but we got three good games out of him before it went." Perhaps all that can be said is that what is good and what is bad painkilling practice is a matter of opinion, often firmly stated opinion. Some doctors feel that shooting so much as a sprained thumb is dangerous and unethical, while others see nothing wrong with freezing a broken leg.

With one exception, the major athletic drugs, whether restorative or additive are used to achieve temporary results. They are taken before, during or after a contest, to get ready for it, to help during it or to repair damage done to the mind or body by the game. The exception is the drug group known as the anabolic steroids. The purpose for which these drugs are used by athletes is exclusively additive. The intention is not to change momentarily a mood, sensation or bodily process, but to alter the body of the user on a relatively long-term basis, to artificially create a better athletic instrument.

Steroids are a group of complex compounds naturally produced by many plants and animals. The steroids are hormones, and among these are the androgens, male hormones produced by the testes and the cortex of the adrenal glands. Anabolic steroids used by both male and female athletes are derived from male hormones. (Among the most commonly used are Dianabol, Durabolin and Deca-Durabolin, Maxibolin, Anavar, Nilevar and Winstrol.) The androgens have many effects on the body. They influence the development of male reproductive organs and secondary sexual characteristics, beard growth, thickness of skin, depth of voice, and they stimulate the libido (sex drive). A second major effect of the androgens is anabolic, *i.e.*, body building. They improve the assimilation of protein and thus promote increased weight and muscle mass. Presumably this characteristic evolved because it served the species to have males bigger than females. (However, if given in excess to youngsters, they may stunt growth.)

The term anabolic steroid (literally, body-building hormone) is both euphemistic and misleading, since it implies that the principal effect of such drugs is body building and that the androgenic (sex influencing) properties have somehow been removed or greatly inhibited. Actually as even the drug manufacturers admit in the small promotional print, there is no such thing as a strictly anabolic steroid. All of these drugs do affect sexual processes and characteristics.

Athletes take anabolic steroids in hopes that the drug will artificially make them bigger and stronger. However, more sophisticated athletes are now aware that the anabolic steroids may cause potent glandular reactions. The nature of these effects, benign or malignant, temporary or permanent, are a mystery and a worry not only to athletes but to physicians and physiologists as well, since there have been no serious, controlled, inclusive investigations of what the drugs do for or to young healthy bodies. Several of the so-called studies that have been made have been do-it-yourself affairs that produced more rumors than facts.

In the early 1960s a high school team physician, working in cooperation with a pharmaceutical company, gave anabolic steroids to members of the football team. The program was clandestine. It apparently violated state interscholastic regulations and came to an abrupt halt when other football coaches heard about it and complained. Supposedly a report on the effects of the hormones on the high school boys was made, but the pharmaceutical company will not release it and the doctor will not discuss it.

Dr. H. Kay Dooley, of Pomona, Calif., now perhaps the physician who most openly advocates the use of anabolic steroids—though under a doctor's supervision—oversaw a study in 1965 testing three different commercial brands of the drug on 10th- and 11th-grade football players in Bloomington, Calif. Dooley believes the drugs did increase muscle size and improve performance, and he says there were no undesirable side effects. However, he says his procedures were not sufficiently controlled to provide hard evidence supporting the efficacy of the drug. He would like to see "a good scientific study" done.

Perhaps the best existing document on the subject was published in 1966 by Dr. William M. Fowler Jr., then of the UCLA Medical School. Summarized, the Fowler report found that the hormonal drugs do increase weight. However, said Fowler, "To equate increases in weight with a possible increase in strength can be erroneous, since considerable evidence exists that much of the increase in weight is due to water retention." Fowler concluded that the relationship between anabolic steroids and strength increase in athletes is unproved, and may be unprovable because it does not exist. As to the dangers connected with the drugs, Fowler lists as major ones: testicular atrophy, change in the libido, liver damage and edema.

In preparing his report, Fowler queried 38 "well-known weight lifters or field-event men." He found "50% had taken or were taking one or more of the anabolic steroids. Of the users, 47% had received the drug from physicians, and 47% were taking a dosage that was two to four times greater than the therapeutic amount recommended. All of the 19 men on the drugs expressed the belief that their performance had improved. Only five denied any side effects. Most of the 19 men had been taking anabolic drugs on and off for at least one year."

Considering the debatable effectiveness, the potential dangers and the abusive use, Fowler arrived at a strong conclusion: "The use of androgens in athletes is unethical and illegal, and those using or administering them should be banned from further competition or professional activity."

Another concern is the suspicion of many physicians that the anabolic steroids may increase the chances of premature cancer of the prostate. Says Dr. Allan J. Ryan of the University of Wisconsin: "We won't be truly able to evaluate the damage this fad may have caused for 10 or 15 years."

All in all, the anabolic steroid scene is not a happy one. There is a lot of clandestine gossip that the drug is effective and safe—or that it is useless and dangerous—but no one has convincing proof either way. Many anabolic steroid users feel guilty about the practice and suspect they are doing something sneaky, but no sporting body in the U.S. has specifically declared the drug illegal, or for that matter even plainly said that its use is unethical or dangerous.

Among many who are perplexed by the anabolic steroid problem and the general confusion surrounding the athletic medicine chest is Dave Maggard, the young University of California track coach who was a shotputter on the 1968 Olympic team. Maggard's problem is simple: he is uncertain how he should advise the young men he is coaching.

"What I wish," says Maggard, "is that some reputable scientific group would really study certain drugs and tell us yes or no as to whether they are effective, and yes or no as to whether they are dangerous. Then I'd like to see the NCAA, the AAU, the U.S. Olympic Committee and all the conferences go ahead and put us straight—tell all of us to either use the drugs, or don't. I think if most drugs were banned—things like amphetamines, barbiturates, anabolic steroids—most athletes would stop using them. It's this halfway stuff, the rumors, the idea maybe you have to use them to be competitive that has made it such a mess."

That there is not now sufficient information to give firm answers on the safety and effectiveness of the many drugs and athletes use does not diminish the importance of Maggard's question, nor provide an excuse for ignoring it.

"Someday," says Dr. Ryan, "somebody will find a drug that measurably improves performance, is expensive, and is not available to everyone or known by everyone. That is the day when we are all going to have to stand up and be counted on what is right and wrong—we will have to decide then what sport is all about."

Unlike the conservative Dr. Ryan, a good many athletes, coaches, trainers and physicians believe that we already have found the alchemist's stone; it is anabolic steroids, amphetamines, strychnine, iboyaine, muscle relaxers, B-12, cortisone, etc., etc., etc. Whether it is true or not, the belief and the practices that follow the belief are enough to suggest, as they have to Dave Maggard, that the stand-up-and-be-counted time has already arrived for the athletic Establishment.

[NEXT WEEK.—No U.S. sport—horse racing aside—enforces rules against drugs. Bil Gilbert explains how this shocking see-no-evil policy endangers not only the competitors—but sport itself.]

[From Sports Illustrated, July 7, 1969]

DRUGS IN SPORT: PART 3—HIGH TIME TO MAKE SOME RULES

With the help of his doctor and his conscience, the average citizens makes most of his own decisions about drugs. But the athlete, a participant in organized games, cannot be permitted this luxury. If the pleasures of competition and joys of victory are worth keeping, sport must realize that it is . . .

(By Bil Gilbert)

Drugs can kill sport. That, one assumes, reflecting upon the filled ball parks, the jammed arenas and the sorry-no-standing-room reports from events such as the Masters, ought to be an exaggeration. But it is far from excessive to conclude that the increasing use of drugs by athletes poses a significant menace to sport, one that the athletic Establishment is assiduously trying to ignore. While commissioners, owners, managers, coaches and trainers pretend that the situation in 1969 is no different than it was 30 years ago when the most stimulating thing you got at a drugstore was a soda, the truth is that today's athletes are popping more pills for more purposes than are dreamt of in almost anybody's philosophy—or pharmacy.

In spite of this, only one major American sport has any drug regulations. That is horse racing, and though the subject of its attention is not human but animal, it provides an instructive example of how to face up to the drug problem in sport.

It can be claimed that horse racing is the sport with the worst reputation for doping. In a technical sense the reputation is deserved, since nowhere else in U.S. sports do any drug regulations exist that can be broken. In 1967 the National Association of State Racing Commissioners reported 65 cases in which illegal drugs had been used on horses and fines or suspensions were ordered. There followed in 1968 the notable Dancer's Image incident in the Kentucky Derby. The drug involved was Butazolidin, which was used prior to the race to relieve soreness in the colt's ankle. At about the same time the drug was being prescribed to ease the pain in the throbbing shoulder of Boston Pitcher Jim Lonborg and was being taken by numerous other athletes in distress. But this is not surprising, for almost all of the drugs used by human athletes have been tried on horses. Among those that racing officials consider illegal within a specified time before a race are: painkillers, such as Novocain and the opiates; anti-inflammants, such as Butazolidin and corticosteroids; stimulants, such as amphetamine, strychnine and caffeine; sedatives, such as tranquilizers and barbiturates; anabolic steroids; antibiotics; and iodine (injected to slow down a horse).

But instead of implying that racing is a dirty sport, racing's drug rules suggest that, in this regard, at least, it is one of our least hypocritical. Racing has admitted that drugs can affect athletic performance, defined what doping is and established an apparatus to detect the practice and punish offenders. Other members of the athletic Establishment could worse than study racing's regulatory drug procedures and philosophy.

One thing that makes the racing situation particularly instructive is that since the competition is between animals, the issues are not obscured by real or phony sentimentality. There is little pretense that anti-doping regulations exist for the good of the horses. The rules are for what racing potentates consider the good of the sport.

Most other sports have found it very difficult to deal with even this simple distinction. In the few sports (European cycling and soccer, and the Olympics) that do have meaningful anti-doping codes, the basis for establishing or defending them has been to protect the health and safety of the athlete. Paradoxically, the same grounds are often cited in other sports to explain why they have no doping rules: since there is no danger to life and limb because of drugs, there is no need to regulate drug use. "These young men are like sons to us," intone the men who run sport. "We are concerned with their well-being. We would never give them or let them take harmful drugs. There is no need to stir up a lot of rumors by passing unnecessary rules."

Assuming, just for the sake of argument, that some of this may be true, it is still not relevant. The cold, objective point is that drugs do not kill or corrupt enough athletes to constitute anything but a very minor public-health problem—so far. To use the protection-of-the-players argument to explain why drug regulations either are or are not necessary is intentionally or unintentionally misleading. The substantive problem is that drugs can corrupt a sport.

This is the key premise that has been accepted by racing. Without becoming embroiled in humane or metaphysical debates, racing has defined what sport is—or at least should be. Sport is a matching of two or more peers to determine who can best perform certain physical feats. For sport to be of interest, to have emotional impact, to be an artistic or a commercial success, the contestants must be as equal as possible. None should be allowed an artificial advantage over the others and, just as important, all suspicion of such advantage should be eliminated. Racing is most dogmatic on this point and has carried it to its logical conclusion. Horses are matched according to age, sex and past performances.

Furthermore, in an attempt to make them all equal at the post, swifter animals are handicapped with extra weight. Racing has also unequivocally banned a long list of drugs on the grounds that if used they might give one horse an artificial edge.

Other sports at least implicitly accept this definition of sport. Every sport has rules, the basic purpose of which is to equalize competition. Like horses, many athletes are segregated for competition according to sex, age, size and skill. There are regulations governing equipment (the number of spikes in a shoe, for example), when one may practice (scholastic sports), where practices may be held (the 1968 Olympics). Without such discipline there is no sport. The rules, even such basic ones as how many shall compete for how long on what size field, court or course, are designed to focus attention on the men performing; to measure their weaknesses, virtues, speed, strength, agility, stamina, intelligence, instincts, resistance to pain and pressure and their self-control. The mystery and drama of sport for both participants and spectators, has always been the unfolding action that occurs when men match these intangible elements of their characters. It is the thing that elevates sport to an art form, perhaps our oldest. However, the motive for using drugs is to remove both the drama and the mystery by literally fixing the outcome in the most subtle of all ways, by changing the character of the performers. Any use of drugs, no matter how benign they may be, is an attempt to destroy what is sporting about sport, to reduce sport to the status of an entertainment, a demonstration, a spectacle.

Acting on this assumption, that doping, or even the hint of it, is a sure way to despoil a sport, the racing Establishment, again avoiding hairsplitting, defined doping. Doping is giving a horse any of a number of compounds that a racing commission suspects might possibly make the animal run faster or slower than he otherwise would. The rules of the Illinois Racing Board are fairly typical: "Whoever administers or conspires to administer to any horse a drug or stimulant or depressant, internally, externally or by hypodermic method . . . or whoever knowingly enters any horse in any race within a period of 24 hours after any hypnotic or narcotic or stimulant or depressent has been administered . . . for the purpose of increasing or retarding the speed of such horse, is guilty of a felony and punishable by a fine of not more than $5,000, or by imprisonment in a state prison or a county jail for not less than one nor more than two years or both such fine and imprisonment."

There follows a listing of what kinds of drugs are considered hypnotic, depressant, stimulatory, narcotic—almost all fall into one category or another. The rules, and the drugs banned, vary slightly from state to state. For example, if the Kentucky Derby was the Colorado Derby, there would have been no Dancer's Image scandal, Butazolidin being legal in Colorado. However, the list of illegal drugs is, by and large, much the same everywhere. It is a long one, as racing commissions have also avoided trying to make fine technical distinctions between restorative and additive drugs. If, for example, a horse has a sore leg and is given a drug such as Butazolidin, most racing commissions assume the motive was to remove the soreness, thus enabling the horse to run faster than he otherwise might. Therefore, giving Butazolidin is doping—tampering with performance.

Nor have racing commissions entered into arguments about the effectiveness of various drugs: does Butazolidin, a tranquilizer or an amphetamine actually make a horse run faster? Horesemen have better information on the subject than medicine men in other sports. The position of racing commissions is simply that if something is used with the intent of altering performance, the assumption will be that it does. "Butazolidin—or almost anything else—is dope because we say it is dope" is the essence of the regulations. This is an arbitrary, unscientific approach, but a practical one. Few other sports have been able to agree on this fundamental issue of what is dope, though enough formal definitions have been offered from time to time to fill a medium-sized rule book. Some of these include:

"The intake of substances aiming to artificially increase during a competition the performance of the competitor with detriment to the morale of the competitor and to his physical and psychic integrity must be considered doping."—Italian Federation of Sports Medicine.

"The use of any drug—effective or not—given with the intent to increase the performance in competition, must be considered as doping."—The German League of Sports Physicians.

"Doping is the administration to, or the use by, a healthy individual of an agent foreign to the organism by whatsoever route introduced, or of physiological substances in abnormal quantities or introduced by an abnormal route with the sole object of increasing artificially and in an unfair manner the performance of that subject while participating in a competition. Certain psychological procedures designed to increase the performance of the subject may be regarded as doping."—Council of Europe Committee for Out-of-School Education.

All such definitions can be quickly attacked, and usually reduced to absurdity. "What, argues Dr. H. Kay Dooley, of Pomona, Calif., "is the ethical difference between giving anabolic steroids and wrapping an ankle? Both are done in an attempt to help the athlete perform better."

In May 1964 a conference on doping sponsored by UNESCO was convened in Belgium. The three-day affair, which drew 40 of the world's leading sports physicians and physiologists, foundered on its first question—what is doping? After listening to one particularly weighty, academic definition, Professor Ernst Jokl, head of the first German institute on sports medicine and now a physiologist at the University of Kentucky, snorted "Medieval Scholasticism." He then suggested that three steaks eaten by a hammer thrower might be a physiological substance in abnormal quantity and therefore dope.

One possible way out of the definition morass was suggested by Professor E. J. Ariens, a Dutch physician. He would, by fiat, declare that there is no such thing as doping; let anyone take anything he wants so long as he gets it from a licensed physician. Said Ariens at the UNESCO conference: "We live in a time when sportsmen are sold from one league or club to another. There is a gliding scale from pure professionalism in sport via semiprofessionalism and quasi-nonprofessionalism to true uncomplicated sportive competition by amateurs. Rigid training schedules of eight hours and more a day are accepted and considered 'natural.' Maybe for certain forms of professionalism in sport, the acceptance of expert-controlled conditioning by drugs would be less detrimental than today's clandestine and backward use of these means, which brings about unnecessary risks for the health of many of our favorite sportsmen."

Ariens' approach has the obvious advantage of doing away with hypocrisy, which in itself is one of the most corrupting features of drug usage. However, the proposal has several serious drawbacks, the most important of which has already been noted: the use of drugs strikes at the fundamental nature of sport, namely, competition between equals. Given their head, most athletes and their attendants could be expected to start a mad scramble, a sort of sports equivalent of the arms race, as they tried to find new, secret drugs that would give them at least a temporary advantage over the opposition. The winners in such a situation might well not be the best athletes but the richest, those with the best technological resources at their disposal.

"We are already reaching the point, in the Olympics, for example, where competitors from affluent, developed nations have a real advantage," says Dr. Allan J. Ryan of the University of Wisconsin. "If we don't do something to control drug use, this could bring about the same situation in many sports. Suppose, though I don't think it is the case, that $150 worth of anabolic steroids would improve the performance of a high school football player by 10%. The boys who can spend $150, or the teams that can pay $3,000 or so for the drugs, are theoretically going to have a 10% advantage over those that can't."

Given the difficulty—or impossibility—of finding a rational definition for dope, the alternative to Professor Ariens' suggestion of adopting a hands-off policy seems to be settling on a practical, if arbitrary, definition, as has been done by horse racing. In the process you let the logical chips fall where they may. Thus while both aspirin and Novocain are drugs, a sporting body may say, in a regulatory way: "Aspirin—yes (it is common, cheap, universally available, mild), but Novacain—no (it is more potent, more difficult to obtain and administer)." Such a ruling is indisputably authoritarian, but so, fundamentally, is the restriction requiring that a football team have only 11 men on the field at the same time. It amounts to simply saying this is one rule of the game—and if you play, you play by the rules.

Such an approach has been used by certain athletic bodies—the International Olympic Committee, for one—which have tried to control drug usage. The IOC announced, in essence, that though there were a lot of drugs being used, if in the 1968 Games you were caught using alcohol (in excess), amphetamines, ephedrine, cocaine, vasodilators, opiates, certain analgesics or hashish, you would be regarded as a cheat and punished. That was the rule.

Horse racing also has openly recognized another sporting phenomenon that others often attempt to ignore. To put it politely, it is in the nature of competitors to seek whatever advantage they can get. To put it bluntly, the compulsion to cheat is strong in athletes. The rules of the artificial world of sport correspond to the physical laws of the real world—they delineate the areas within which we can perform. The desire to circumvent these restrictions is a sort of Faustian impulse that in many ways can heighten sporting suspense. Take, as an obvious example, the rolling start in track. This is an attempt to be on the move a split second before the gun is fired and is an illegal technique. However, it is one which all sprinters know, many of them because they have been taught to roll by their coaches. It is the responsibility of the starter to catch the rolling sprinter and penalize him. The duel between the runner and rule enforcer can be a high moment in a track meet. However, unless the starter wins the argument most of the time, there is no suspense—and no sport.

So it is, say racing officials, with drugs. It is not enough to say thou shalt not dope. No matter what is said, the assumption is that veterinarians, trainers, owners, jockeys and hangers-on are going to try now and then to drug horses. Therefore, if drugging is regarded as a serious offense, there must be an apparatus for detecting cheaters, a code by which they will be punished.

All racing commissions have such an apparatus and code, though the efficiency, vigor and sincerity of enforcement varies from place to place. Also, nobody claims that the methods currently used are foolproof, that all drugged horses are discovered or that all drug givers are punished. However, the fact remains that a serious effort toward this end is made. Furthermore, with a few exceptions, the trend in American racing is to improve the detection system and to tighten drug restrictions.

By contrast, not a single major U.S. sporting organization, amateur or professional, governing human competitors has specific anti-doping regulations with an enforcement apparatus. In the way of negative examples, the following are among the statements or documents of some big U.S. sports regarding their drug policies.

Warren Giles, president of the National Baseball League, says that there is nothing in the rules about prohibition of drug use. "Nothing has ever come to my attention that would require a special ruling. It never has come up, and I don't think it ever will." (He would do well to check the locker rooms of a few of his teams before a game and watch who swallows what).

"The American League has no rules regarding pep pills, painkillers, etc. Baseball players don't use those types of things," says the league's executive assistant, Bob Holbrook.

Professional football: "We have rules on gambling, etc., but none on medical matters," says NFL-AFL Publicity Director Don Weiss. "These are left to the club physicians and the club trainers in both leagues."

Says the American Basketball Association: "A player should not do anything which is detrimental to the best interests of the club, of the ABA or of pro sports. He must always remain in good condition."

"We have no written rules on the subject of drugs," says Haskell Cohen, for 17 years the National Basketball Association publicity director. "The league does not interfere with individual club trainers."

National Hockey League officials say they do not recall ever issuing any statement or laying down rules about the use of drugs. Ken McKenzie—now publisher of *The Hockey News* and longtime NHL publicity director—says, "I can honestly say that in my 17 years with the NHL, I never heard any talk about drugs."

"Responding to your request for verbatim rules and policies of the NCAA and NAIA on the use of pep pills, weight builders, painkillers, etc., neither organization has any formal rules or stated policy on this matter. The NCAA says it relies on trainers and team physicians to protect the welfare of its athletes. The NAIA says no need has arisen for formal rules or policy statements," reports a Kansas City correspondent.

Howard Grubbs, executive secretary of the Southwest Conference: "We don't have any regulations on drugs, alcoholic beverages or anything. That's up to the individual schools."

William E. (Pinky) Newell, trainer at Purdue University and for 16 years the executive secretary of the National Athletic Trainers Association: "All trainers are very much opposed to the use of drugs, but as an association no policies have been made or initiated or directed to anyone at all because this is a medical problem."

From the minutes of the May 20, 1967 meeting of the team physicians of the Pacific Eight Conference: "We recommend that the conference adopt a policy endorsing the American Medical Association Committee on the Medical Aspects of Sports' suggestions on drug usage in athletics, particularly with reference to banning the use of pep pills, anabolic steroids and any other artificial aids which hopefully and supposedly improve performance." The resolution was not acted upon.

A letter dated Dec. 1, 1967 from Edwin J. Holman, director of the AMA's Department of Medical Ethics to a San Francisco physician: "I have your letter of November 29 asking if it is legal and ethical for you 'to prescribe moderate doses of anabolic agents to weight lifters for two or three weeks prior to competition, followed by intervals of three months or more without these agents.' No categorical answer can be made to your inquiry inasmuch as this is basically a medical question. The physician must exercise sound medical judgment in prescribing any drug. Sound medical judgment is not determined by the courts, but rather by fellow physicians . . ."

A variety of reasons are given for the absence of any drug regulations. The most common is that there is no problem, that doping is something that is done only by depraved European bicycle racers—"therefore there is no need for rules in our sport."

Such remarks made made about almost any sport are at the very least nonsense, and at worst deliberate lies. In almost any American sport athletes are using drugs which, if they were horses, European cyclists or soccer players or Olympians, would get them suspended, fined or even imprisoned.

If a no-drugging code were suddenly implemented at midseason in pro football, it is doubtful that a single team could field an offense or defense. Indeed, if such a code is ever passed in pro football, careers are certain to be affected and there will be a difficult period of adjustment.

A somewhat more subtle anti-regulation argument is that most drugs used by athletes to improve performances may not do so. Since, it is argued, they are ineffective—*i.e.*, they don't change the outcome of a game—why legislate against them? If this is valid, it suggests a practical course of action that the sports Establishment might follow, one that might clear up much of the drug mess. As things stand now, very few serious efforts have been made to find out what many of the commonly used drugs do or do not do for athletes. However, getting such information is not a technical impossibility, as is sometimes hinted.

"My own feeling," says Dr. Harold Upjohn, an ex-athlete from Yale who is now research head of The Upjohn Company, "is that there probably will be and perhaps already are drugs that will affect human performance. For example, there is a suggestion that oxygen may be used to influence intelligence. I think the drug industry will start moving toward finding and marketing potentiating drugs, ones that allow people to do things they might not otherwise be able to do. Insofar as sport is concerned, it might cost a little money and take some time, but it would not be difficult to test some, say, amphetamines, to determine how much they alter performance. Whether they should or should not be used would then be a matter for sports organizations to decide."

In their present state of relative affluence, it seems that the athletic ruling bodies should, if they could pull themselves together, be able to pay for the kind of studies Upjohn suggests, studies that would be conducted by an independent research organization. If some drugs did prove to have a measurable effect on performance, then the sports organizations would be in a position to decide, on the basis of factual evidence, whether they should be used by all competitors, or by none. The matter would at least be out in the open.

But the very suggestion of enforcing drug regulations chills many athletes and administrators. The indignity of the practice, of treating American boys like Thoroughbred horses, is frequently cited as a deterrent. However, athletes customarily take physical examinations, swear to their amateur status, have equipment inspected to see that it conforms to rules, are declared ineligible in many sports if they gamble, beat up referees or fail Basket Weaving II. In comparison to these matters, submitting to a drug test should not amount to cruel or unusual punishment.

Drug tests are impractical, time-consuming and too expensive, runs another rebuttal that does not bear close examination. In Mexico City in 1968 a thousand Olympic athletes were tested for drugs during a two-week period. Horses, larger and more fractious than athletes, are routinely tested. Furthermore, no drug test depends for its effect on examining all participants. A random selection is made. The possibility of being among the group tested acts as something of a deterrent for all. As an example, one testing team that would show up unannounced each Sunday in a professional football locker room would do more to halt the use of drugs than a lifetime of proclamations and warnings by commissioners, physicians, trainers, etc.

Another frequently heard objection is that tests cannot eliminate drug cheating, because athletes will find ways to beat them. No system is perfect. Some sprinters do get rolling starts no matter how vigilant the starter, but not nearly so many do as would if starters did not police the procedure. Logic alone indicates that the threat of being caught would deter many dope users. Evidence from the few sports where control has been tried support logic. The International Olympic Committee, in announcing the 1968 drug-testing procedures, said, "It is interesting to cite the fact that in October of 1967, during the Third International Sports Competition held in Mexico [the Little Olympics], the medical commission established the basis for the special tests that were effected on the participating athletes. A total of 234 tests were made, all of them turning out negatively. Without a doubt, a prior publication of the fact that tests were to be made caused those who might have thought of using drugs to abstain from doing so. It is hoped that the same results will be apparent in the Games of the XIX Olympiad." The same results were apparent; only one athlete among the 1,000 tested was found to be doped. His drug—alcohol.

The arguments against defining what is dope, writing anti-dope regulations and enforcing them are usualy convincing in only one respect. They make it clear that many people in sport are afraid that such rules would either force them to change their current drug practices or have them exposed. In the final analysis, this fear and the guilt feelings it engenders are more shocking than the drug practices themselves. Rationally—and legally—there is no reason for the guilt, particularly in America where there are no laws prohibiting the use of any legally obtained drug. A shotputter who takes prescribed anabolic steroids is breaking no law. He risks no punishment. Yet most such athletes feel guilty, as do many physicians who inject Novocain and hand out pep pills. Each "off the record," "no comment," "I don't know anything about it," each—let's say it—*lie* adds another thread to the fabric of guilt. It gives further evidence that unless controls are established the present practices inevitably will lead to a sports scandal and humiliation.

This pervasive feeling of guilt among those involved sets forth better than any amount of expert testimony at least two important facts. Those responsible for the administration of athletics are not happy with the present drug policies. They are unhappy because they believe the policies are self-corrupting, and if what they—as members of the sports Establishment—are doing becomes public knowledge, they will be regarded as corrupt, and as corrupters.

There are other factors tending to destroy sport: too much money, too much pressure, too much exposure. The total influence of them all is to fix games, to remove the fundamental drama, the mystery and the art of sport by dehumanizing it. Short of slipping ringer robots into the lineup, the use of drugs, so far as intent goes, is the most dehumanizing practice of the lot.

APPENDIX 2

[From the New York Times Magazine, Oct. 17, 1971]

IT'S NOT HOW YOU PLAY THE GAME, BUT WHAT PILL YOU TAKE

(By Jack Scott[1])

From little-league teams all the way up to college and professional ranks, the breakfast of champions these days is likely to be some drug—upper, downer, painkiller, muscle-builder. The genie of the pill bottle threatens both athletes and athletics.

Drug usage is quickly becoming as common among athletes as the wearing of white sweat socks. Tom Ecker, a former college track coach who has written six books on sports, believes "it's a great rarity today for someone to achieve athletic success who doesn't take drugs." My own experience as an athlete, coach and journalist would tend to corroborate Ecker's claim.

At the 1968 Olympic Games in Mexico City athletes and coaches were not involved in debating the morality or propriety of taking drugs. The only debate was over which drugs were most effective and what kinds of amphetamines could go undetected in the tests Olympic officials were requiring athletes to take at the conclusion of their competition.

Bill Toomey, gold medalist in the decathlon at the 1968 Olympics and winner of the Amateur Athletic Union's prestigious Sullivan award, had admitted that he was using drugs to aid his athletic performance at the Mexico City Olympics. Toomey was not using drugs to take an unfair advantage over his opponents. In fact, he claims to have sworn off drugs before the Olympics only to return to them when he arrived in Mexico City and discovered his fellow competitors were using them.

Toomey was by no means the only member of the 1968 United States Olympic track and field team using drugs. According to Dr. Tom Waddell, a physician as well as active decathlon performer who himself placed sixth in the Mexico City Olympics decathlon, more than a third of the United States track and field team was using anabolic steroids during the pre-Olympic high-altitude training camp at South Lake Tahoe in 1968. Most of the athletes were taking the steroids—a drug that is believed to make athletes bigger and stronger—orally, but some athletes had their own hypodermic syringes and were giving themselves injections.

The one-third incidence rate on the 1968 Olympic track and field team is somewhat deceiving, for there are many track events where an athlete would have nothing to gain by taking steroids. Consequently, if one-third of the team was using steroids, this meant that nearly all the hammer-throwers, discus-throwers, shot-putters and other athletes involved in heavy strength events must have been using them. This seems to be the case, for most of our top weight men in track and field have either publicly or privately admitted to using steroids; the list, according to Sports Illustrated, includes Randy Matson, the 1968 Olympic champion and world record holder in the shot-put; Dallas Long, the 1964 Olympic shot-put champion; and Hal Connolly, the 1956 Olympic champion in the hammer-throw.

Steroids are by no means the only drugs used by athletes, and neither is track and field the only sport where drug usage is prevalent. Though the kind of drugs taken and the quantity of the drug used may vary from sport to sport, there is probably no type of athletic activity of a highly competitive nature where athletes do not use drugs.

At the 1970 world weight-lifting championships in Columbus, Ohio, nine of the first 12 medalists were disqualified when urine tests—being used at the championships for the first time—revealed they had taken amphetamines. Ken Patera, an

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[1] Jack Scott is director of the Institute for the Study of Sport and Society in Oakland, Calif., and author of "The Athletic Revolution."

American competing in the championships who admitted to using stimulants, called the disqualification "ridiculous," according to a story in The St. Petersburg Times. Patera—quite honestly—pointed out that weight-lifters routinely had been using amphetamines for years. And just this past summer, after winning a gold medal at the Pan Am games in Cali, Colombia, Patera talked about how he is looking forward to competing against the Russian champion, Alexeyev, at the 1972 Olympics in Munich. "Last year the only difference between me and him was that I couldn't afford his drug bill," said Patera. "Now I can. When I hit Munich next year, I'll weigh in at about 340, maybe 350. Then we'll see which are better—his steroids or mine."

The first major-league baseball player to expose the use of amphetamines in baseball was Jim Brosnan. In "The Long Season," a diary of his 1959 season as a major-league pitcher, Brosnan revealed how amphetamines were used by players to help them make it through the seemingly endless baseball schedule. Jim Bouton and Leonard Shecter talked about the use of "greenies" (amphetamines) in their best-selling book, "Ball Four." And this past winter Chuck Dobson, a pitcher for the Oakland Athletics, publicly admitted he used greenies, according to a story in The San Francisco Chronicle. "When you've got the flu and you've got to pitch, what are you going to do?" Dobson rhetorically asked a sports writer. Told that Baseball Commissioner Bowie Kuhn was thinking of prohibiting the use of greenies, Dobson said, "I'd like to see him put on a uniform for 162 games in 180 days, and then see what he says."

The use of stimulants in bicycle racing is almost as old as the sport itself, and on numerous occasions this practice has been linked to the deaths of cyclists. Jacques Anquetil, a French cyclist as well known in his country as skier Jean Claude Killy, openly admits to doping himself. "Everyone in cycling dopes himself," according to Anquetil. "Those who claim they don't are liars." European cyclists became so infuriated a few years ago when officials attempted to prevent them from using drugs that they staged a slowdown strike.

In addition to steroids and amphetamines, pain-killing drugs are regularly used by athletes in the violent body-contact sports. Writing in Sports Illustrated, Bil Gilbert described an incident from the 1964 Stanley Cup finals in professional hockey. "Midway through the sixth game against Detroit, Bobby Baun, then of the Toronto Maple Leafs, was hit on the leg by the puck and carried from the rink on a stretcher. In the training room he received an injection of Novocain. His leg was taped, he returned to the play, and he scored the winning goal in overtime. The next day it was determined Baun had a cracked right fibula. Nonetheless, he was shot with painkiller and willingly, probably eagerly, took his regular turn on the ice the following day." And just a few months ago, an A.P. story quoted Bill Staley, a defensive tackle for the Chicago Bears, as saying Bobby Joe Green, the Bears' punter, got 17 shots of a painkiller before one game last season.

Almost needless to say, the sensation when the painkilling drug wears off is not a pleasant one—even if you don't have a broken leg like Baun. Gus Johnson, a star player for a Baltimore Bullets of the National Basketball Association, was repeatedly injected with a painkiller this past season so he could play on an injured knee. The pain when the drug wore off finally got so intense Johnson stopped getting the injections even though he was forced to miss some crucial play-off games. "For two and a half days after the last game I felt like I could've cut my leg off," Johnson commented at the time. "When the Xylocaine wears off it's not just a downer, its a flip-out."

The sport where the greatest variety as well as the greatest quantity of drugs are used is football—particularly professional football, although the use of drugs in football often extends all the way down to the Pop Warner Leagues. I recently had an irate and disgusted parent tell me how the star quarterback on his son's Pop Warner League team was given three injections of a painkiller so he could play in the "championship" game. As startling as this may seem it is not really surprising, for, from the players on the field to the coaches on the sidelines, Pop Warner League participants dress and behave as miniature replicas of their heroes in the college and professional ranks.

Johnny Unitas, the great Baltimore Colt quarterback, was interviewed on television in the jubilant Colts' locker room after the 1971 Super Bowl in which the Colts defeated the Dallas Cowboys on Jim O'Brian's last-second field goal. Unitas had left the game in the first half with an injury and had not played at all in the second half. Quite innocently, the interviewer asked Unitas if he would have been able to play in the second half had the team needed him. In a comment that is rumored to have caused attacks of apoplexy in the National Football League front office, Unitas, the hero of millions, blurted out that they had given him a shot at half-time and he couldn't feel a thing.

Unitas' admission before 15 million television viewers caused quite a stir among N.F.L. administrators, for during the previous four months the N.F.L. publicity department had been quietly but actively denying rumors and allegations that the use of drugs was rampant in professional football. Houston Ridge, a defensive tackle for the San Diego Chargers, had filed a $1.25-million law suit charging conspiracy and malpractice in the use of drugs on the part of the N.F.L. and various coaches, physicians, trainers and team officials of the Chargers. Ridge claimed he was given steroids, amphetamines and barbiturates "not for the purpose of treatment and care but for the purpose of stimulating his mind and body so he would perform more violently as a professional football player."

Although the issue of liability in the Ridge case is still to be determined by the courts, it has been claimed that the San Diego Chargers freely dispensed both amphetamines and steroids. In testimony before a California legislative subcommittee inquiring into drug abuse in sport, Paul Lowe, a former all-pro running back for the Chargers, claimed pink steroid pills were placed next to each player's plate on the dining table in the Charger training camp. According to Lowe, there was a clear implication that players who refused to take the pills would be fined. Additionally, Lowe and other Charger players claim they were not even informed in advance that the pink pills were steroids.

Just as the publicity surrounding the Ridge suit began to die down, Dave Meggyesy, a seven-year veteran linebacker for the St. Louis Cardinals, published his hard-hitting autobiography, "Out of Their League." Meggyesy told how he was "shot up" with Novocain as early as his sophomore year in high school so he could play in an "important" game despite a severe neck injury. "When the numbness wore off after the game," Meggyesy wrote, "my head felt like it was on backwards." But he saved his most biting attack for professional football, claiming most N.F.L. trainers do more dealing in drugs than the average junkie, and that Jack Rockwell, the Cardinal trainer, had a "veritable drugstore" in his training room.

Because of his bearded, long-haired appearance and admitted radical political views—as well as his own use of psychedelic drugs—Meggyesy was attacked *ad hominem* by the conservative sports establishment and his allegations were often ignored. However, shortly after "Out of Their League" was published, Ken Gray, long-time captain of the St. Louis Cardinals, five-time veteran of the Pro Bowl, and a pillar in the St. Louis community, filed a $1.79-million law suit against the Cardinals charging, among other things, that "potent, harmful, illegal and dangerous" drugs were administered to him by the Cardinals without his consent. Though it is somewhat difficult to imagine a 260-pound all-pro football player being given drugs without his consent, Gray's suit did at least indicate that other players besides long-haired radicals felt drug abuse existed in the N.F.L.

The use of drugs to help one's althletic performance is by no means restricted to male athletes. A major scandal almost surfaced a few years ago when a prominent West Coast trainer became infuriated after the coach of a young girls' track club approached him asking for some "bennies" (amphetamines) for the girls on his team. This coach had been having some phenomenal success, and there was much speculation over the role stimulants had played in this success. And the use of amphetamines by 13- and 14-year-old female swimmers—often competing in the Olympics at this age—is not unheard of.

Still, the most serious and dangerous use of drugs by females is the taking of male hormones. In fact, the "sex test"—a hormonal test accompanied by a gynecological examination—has become a standard requirement for female athletes at the Olympic Games and other major international athletic events.

One of the first international competitions to use the sex test was the 1966 European track and field championships. Five women, including the famous Press sisters from the Soviet Union, withdrew from the competition rather than submit to the test. And according to press reports, the women's refusal to take the test was not based on a principled stand against the indignity of the test, but on a fear of not passing it. This was probably the case, for given the pressure the Soviet Union puts on its athletes, it is extremely unlikely the Press sisters would have been allowed to withdraw from the competition if they had been able to pass the test.

The drugs used by athletes are often divided into two categories; those that are primarily *restorative* in function and those that are primarily *additive*. I say "primarily" to indicate that this classification is really arbitrary, for there is usually some overlapping between categories. Restorative drugs are given with the intent of restoring an athlete's skill to what is "normally" would be if it were not for matters such as illness, injury, dissipation or nervousness. Drugs in this category include: barbiturates, painkillers, muscle-relaxers, enzymes, tranquilizers and anti-inflammatants. These drugs are usually not considered controversial, and with the possible exception of painkillers, there is seldom any secrecy associated with their use.

The placing of tranquilizers in the restorative category does, however, point out the somewhat arbitrary nature of the restorative category does, however, point out the somewhat arbitrary nature of the restorative-additive classification scheme. The justification for calling tranquilizers restorative is that they simply help to relax an edgy, extremely nervous athlete and allow him to perform up to his full potential. On the other hand, the argument could be made that tranquilizers are additive, for overcoming tension and anxiety is an integral part of the sport experience. If an athlete cannot perform under pressure without the use of tranquilizers, the tranquilizers are not simply restoring him to his normal level of skill, but allowing him to perform at a level beyond his normal capability.

Golf is a sport where the ability to perform under extreme tension is perhaps the most crucial skill needed—it certainly isn't physical conditioning—and, not surprisingly, some famous professional golfers use tranquilizers.

Dave Meggyesy was such a "superpsyche" when he played football for the St. Louis Cardinals that the coaches had him take tranquilizers before the games. While most of the other Cardinals were using bennies to psyche up for the game, Meggyesy was taking tranquilizers to calm down. Still, after a few games, Meggyesy stopped taking the tranquilizers, for, as he points out in his book, "I felt that part of the challenge of the sport was to be able to control myself without using artificial aids."

Additive drugs are used with the intent of stimulating an athlete to perform beyond his "normal" capability—for example, in the hope of enabling a poorly conditioned player to operate at top speed for the entire game or with the hope of enabling a 47-second quarter-miler to run 46 seconds. The use of these drugs is usually cloaked in secrecy, for they are extremely controversial from a legal and ethical, as well as medical, standpoint.

The most well-known of the drugs thought to be addictive are amphetamines, including methamphetamines (commonly known as "speed" or "meth"), and anabolic steroids. These drugs are controversial from a medical standpoint because of their potentially dangerous side effects, and also because there is much speculation over whether they or any other drug can really help an athlete perform beyond his "normal" capability.

Bil Gilbert, in a series on drug usage in athletics for Sports Illustrated, pointed out how amphetamines have what he termed a triple-threat effect. They work indirectly to suppress hunger, and, consequently, are often used by athletes such as jockeys, boxers and wrestlers when they have to lose weight quickly in order to make a specific weight limit. They also speed up the user's respiratory and circulatory system, enabling him to remain hyperactive when he might otherwise have been overcome with fatigue. And finally, they act directly on the brain, producing a sense of euphoria and an "I-can-lick-the-world" feeling.

Quite aside from the debate over whether amphetamines actually do help an athlete perform beyond his "normal" capability, there is no question that the side effects of amphetamine use are numerous and dangerous. They can be at least psychologically—if not physiologically—addictive, and overdoses, or even regular use of amphetamines, have been known to cause, among other things, ulcers, cerebral hemorrhage, paranoia, cardiovascular collapse, nutritional problems, aggressive behavior and irritability.

One of the star defensive players for the New York Jets during the mid-sixties used to get so high on bennies for the games on Sunday that he was still unable to sleep two nights later before the team reported for Tuesday's practice. The living hell an amphetamine user goes through when the drug begins to wear off is usually proportionate to the quantity and quality of the amphetamine used to get high. The larger the dose and the higher the quality, the more tense and irritable the user gets. Most amphetamine users take some form of barbiturate to help them come down from an amphetamine high, and some athletes quickly get locked into a syndrome where they have to use amphetamines (uppers) to get up for practice or a game, and barbiturates (downers) to help them come down.

Most medical researchers and even a few athletes feel amphetamines do not really help an athlete perform beyond his normal capability. In fact, some athletes feel amphetamines might even detract from top performance since they given an athlete the feeling he is doing well when he actually is not. "I've taken greenies . . .," Jim Bouton writes in "Ball Four." "The trouble with them is that they make you feel so great that you think you're really smoking when you're not. . . . The result is you get gay, throw it down the middle and get clobbered."

Amphetamines may not help athletes involved in activities demanding complex skills, but many athletes competing in simple endurance events swear by them. French cyclist Anquetil has no doubts that amphetamines improve endurance. "We could do without them in a race," he says, "but then we would pedal 15 miles an hour instead of 25."

Amphetamines, though the most commonly used stimulant, are by no means the only drug athletes have used in the attempt to increase their endurance. Strychnine, cocaine ephedrine and caffeine are a few of the other stimulants used to mask fatigue.

Athletes in the violent contact sports regularly use amphetamines not so much to increase their endurance as to help psyche themselves up for the physical combat they have to engage in. Amphetamines are regularly used by football players on the specialty teams, usually referred to as "suicide squads" or "bomb squads." These are the kick-off and punt-return teams whose players, sometimes weighing as much as 300 pounds, slam into each other while running at full speed.

Some critics of football believe the game could not be played at the level of violence it is today—the N.F.L. had already spent more than $2-million on the treatment of injuries half-way through last season—if it were not for the use of amphetamines. The possible truth of this claim was brought home to me recently when I heard a report on the news that Japanese kamikaze pilots during World War II regularly used heavy doses of amphetamines to psyche themselves up before missions. Like a hyped-up bomb-squader running down the field on a kick-off, the pilots would get so high they felt indestructible.

Most drugs used by athletes have a temporary effect, and, not surprisingly, they are usually taken only before, during or shortly after practice or competition. The chief exceptions to this are the anabolic steroids, drugs classified as being additive. Steroids appear to have three positive effects on athletes using them in proper dosage. They improve the assimilation of protein, and this is why athletes using them have sometimes reported 40 and 50 per cent increases in strength. They promote calcium retention, and some doctors have reported height increases even in adults. And lastly, they promote cell growth which, along with the first two effects, also increases body and muscular growth. Athletes normally take steroids in conjunction with a weight-training program, and besides increases in strength, many athletes have gained as much as 50 or 60 pounds in a few months.

However, since the steroids are male hormones, they also influence sexual development, affecting the reproductive organs and secondary sex characteristics. Athletes using steroids have experienced changes in beard growth, depth of voice, sex drive and have had other glandular reactions. There have been no serious medical studies on the long-term effect of steroids, but too heavy a dosage has caused testicular atrophy, liver damage and edema, and some physicians fear their use increases the chance of cancer of the prostate.

The clandestine circumstances surrounding the use of additive drugs such as amphetamines and steroids frequently result in athletes using dosages of these drugs far beyond what even the most gung-ho team physician would recommend. The normally recommended daily dosage of steroids is 2 to 10 milligrams, but a few years ago a national champion high-school shot-putter was taking as much as 30 and 40 milligrams per day. As is often the case, the athlete was getting the steroids, not from a doctor, but from a friendly pharmacist, and he simply assumed that if 10 milligrams per day were helpful, 40 milligrams would be four times as helpful.

Because of the increasing public exposure about the use of additive drugs, most athletes now have to secure them on what could be termed the athletic black market. However, this was not always the case. These drugs were first widely introduced into the American athletic scene by coaches, trainers and team physicians in the high-school, college and professional ranks. Rick Sortun, a college football star at the University of Washington in the early sixties and a six-year veteran of the N.F.L., has told me about how an assistant coach at Washington used to slip the players bennies surreptitiously before each game.

Most college coaches are not slipping their players bennies today, but they are turning their heads while the players use amphetamines secured from the campus drug scene. A survey, done by a football player at the University of California for a class I was teaching there two years ago, showed that more than 50 per cent of the players on the Cal football team were regularly using amphetamines for both games and practice. At Stanford, a starting player on their 1971 Rose Bowl championship team has talked about how he and many of his teammates were using amphetamines not only for games, but also for daily practice sessions. And a former middle-linebacker for the University of Southern California, Steve McConnell, told me that the use of amphetamines for games and practice was at least as common at U.S.C. as at Stanford and Cal.

Cal is an excellent example of how coaches and team physicians first introduced the regular use of additive drugs into the athletic program. Jim Calkins, the co-captain of the 1969 Cal football team, came to Berkeley from a San Diego area junior college. The Cal coaching staff liked his potential, but felt he needed to put on some weight to play tight end. A coach sent Calkins to the team physician, who put him on steroids with the promise that he would grow bigger and stronger.

Calkins gained the weight and strength the team physician told him he would, but after a month or two on steroids he began to experience some side effects he is still hesitant to discuss. "I told the doctor what was happening and he, for the first time, told me about the possible side effects of using them. He took me off the steroids, but looking back, I can see that moment was the beginning of my disillusionment with big-time athletics."

The use of drugs in sports is not without its humorous moments. Gary Power, a nationally ranked high-hurdler, recently told me about an incident in which a top American track and field athlete mistakenly took a heavy dose of downers instead of uppers. The athlete kept waiting for the euphoric amphetamine high to come on, but instead he kept growing increasingly tranquil. Too relaxed to get motivated even to warm up, the athlete withdrew from the competition.

As this incident makes clear, the kind of athletic performance a fan sees is increasingly becoming dependent on what type of pills his athletic hero has been taking. Author-coach Tom Ecker, not without some justification, believes that before long the champion athlete will not necessarily be the one who trains the hardest or competes the best, but the one who has the best pharmacist. And, because of the spiraling use of drugs more and more athletes—such as Bill Toomey during the 1968 Olympics—are having to resort to drugs simply to compete on equal terms with their opponents.

Dr. H. Kay Dooley, director of the Wood Memorial Clinic in Pomona, Calif., has worked closely with athletes for more than 10 years, and he openly supports the use of drugs to aid an athlete's performance. "A lot of physicians are stuffed shirts when it comes to sports," says Dr. Dooley, who believes that medically supervised drug usage by athletes presents no danger to either athletes or sport itself. "Athletes do want to perform better," says Dr. Dooley, "that is what it is all about. If I know of something which may improve performance, a training or rehabilitation technique, a drug that is legal and which I don't believe involves any serious risk, I see no reason not to make it available to an athlete." Since most of the drugs used by athletes can be obtained legally only with a prescription, Dr. Dooley is a much sought-after individual in sports circles, and athletes from as far away as the East Coast frequently show up at his California-based clinic.

Dr. Dooley is not being quite fair, however, when he attempts to portray physicians who have a more conservative position on drug usage by athletes as stuffed shirts who do not understand the realities of the sports world. Dr. Robert Kerlan, now the team physician for the Los Angeles Lakers but a man who is perhaps best known for his efforts to keep Sandy Koufax's arthritic arm healthy during the last few years of Koufax's career, sees the situation in a much more ominous light than Dr. Dooley. "Somebody should speak out on this subject, and speak out strongly" says Dr. Kerlan. "Situations arise where there are valid medical reasons for prescribing drugs for athletes. There are special occupational health problems in some sports," according to Dr. Kerlan, who himself gave injections of cortisone to Koufax. "However, the excessive and secretive use of drugs is likely to become a major athletic scandal, one that will shake public confidence in many sports just as the gambling scandal tarnished the reputation of basketball. The essence of sports is matching the natural ability of men. When you start using drugs, money or anything else surreptitiously to gain an unnatural advantage, you have corrupted the purpose of sports as well as the individuals involved in the practice."

But even Drs. Kerlan and Dooley, despite their philosophical differences on the use of drugs in sport, would agree that the rampant and usually medically unsupervised use of drugs by athletes today poses a severe threat to the athletes' health. This problem is more frightening than one may think, for drug usage is on the increase all the way down to the Little League and Pop Warner teams where, as I pointed out earlier, the coaches and kids use as models their heroes in the college and professional ranks.

Along with the fact that we live in a culture where drugs of all kinds are readily available, the main reason for the increasing use of drugs in athletics in the incredible pressure on coaches and athletes to win. As the late and already nearly deified Vince Lombardi pointed out time and again, "Winning is not everything. It is the only thing."

Drug usage indicates that the product (the winning) is more important than the process (the actual competing). The benefits to be gained by the athlete from the man-to-man struggle, or from the battle of man against himself which were once the essence of most popular American sports, are in no way enhanced by the use of drugs. Drug usage does not heighten the benefits to be gained from competitive athletics; it simply means that actual performance will sometimes be at a level beyond what it otherwise might have been. For example, due to the use of steroids, most of the top shot-putters today all throw about 68 feet, whereas, without steroids, they would probably be throwing about 65 or 66 feet.

If sport were to return to the old-fashioned but still relevant philosophy that "it's not important if you win or lose, but how you play the game," drug usage would certainly be attenuated, if not eliminated. With the prime emphasis on the actual competition—the competing—rather than the outcome—the winning—athletes would realize that there was really nothing to be gained by using drugs, except possibly to facilitate recovery from an injury.

Realistically, however, the Lombardi philosophy that "winning is the only thing" is likely to continue as the dominant one in American athletics. And as long as there is an inordinate emphasis on winning, atheletes will continue using drugs or any other aid they believe will contribute to the likelihoood of victory.

[From the New York Times, Nov. 14, 1971]

LETTERS

DRUGS AND SPORTS SHOULDN'T MIX

To the Editor:

As a former college athlete, I read Jack Scott's article on drug usage among athletes with great sadness ("It's Not How You Play the Game, But What Pill You Take," Oct. 17). I was saddened and angered for I know the factual basis of Mr. Scott's charges, and I cannot help but wonder what our society has done to such a potentially beautiful and fulfilling human activity as sport is and ought to be. Perhaps little can be done to alter the situation in professional athletics, but it's time educators took a stand on what is happening under our very own noses on high school and college campuses throughout the country.

JOHN HURST,
Associate Professor,
University of California, Berkeley.

To the Editor:

I am writing in response to Jack Scott's article on the use of drugs in American sports. My event being the decathlon, I have had numerous opportunities to compete against William Toomey, finishing fifth behind him in the National A.A.U. Championships in 1967. I am currently training in Santa Barbara with a number of America's top hopes for the decathlon in the 1972 Olympic Games at Munich, Germany.

I am confronted on a daily basis by the reality of the drug problem. As a matter of fact, there exists among us the common notion that "no decathlete could win an Olympic medal without the aid of steroids and/or amphetamines." The same idea exists, but to a slightly lesser degree, as far as securing a berth on our American Olympic Team is concerned.

Perhaps now that the truth is out, and if it continues to be exposed, it may be possible for a nondrug-using decathlete to be on our American Olympic Team.

SAM GOLDBERG.

Oakland, Calif.

APPENDIX 3

[Sandy Padwe, Newsday]

DRUGS IN SPORTS—NOT BY TAPE ALONE DO ATHLETES SURVIVE

There was no questioning the man's courage. And that is how it is remembered even now: A tense, dramatic night with a limping Willis Reed dragging his injured leg up and down the court long enough to help the Knicks win the 1970 World's Championship against the Lakers.

He was able to play because he had received shots of carbocaine to deaden the pain in the injured area. When questions were asked why Reed had been allowed on the court, there were replies that Reed was a grown man, with a

chance to play on a world championship team. Furthermore, the Knicks said they had checked and the risk of additional injury wasn't that great.

But should Reed have allowed it? Or had he been so conditioned by the win-at-any-cost system that he did not question even when his health was involved?

In contrast, John Havlicek and Boston Celtic's physician Dr. Thomas Silva, rejected the idea of numbing injections last week and Havlicek played against the Knicks in the fifth playoff game with a painful shoulder injury. Havlicek said he didn't believe in injections because when he was in high school, he had been given a knee injection which led to adverse effects the next day. "You could take 10 different players, 10 different teams," Dr. Silva said, "and come up with 10 different ways to handle something like this . . . All John took were the standard anti-inflammatory pills we give for muscle or sprained ankles. . . ."

The concept of sport as we know it is supposed to be an uplifting experience, one which promotes the idea of sound mind, sound body. But over the last few years a number of professional and amateur athletes have detailed several cases involving the use of drugs as an aid to performance.

Have their revelations led to change in athletics? Just how widespread is the use of stimulant, pain-killing and muscle-building drugs in sports two to three years after the exposes? What types of drugs are still used? By whom? And why?

Beginning today, Newsday, examines the subject of drugs in professional football, professional basketball, college and amateur athletics.

(By Sandy Padwe)

First of a Series

There have been official warnings from the National Football League and from law enforcement officials. There have been law suits against the San Diego Chargers and St. Louis football Cardinals for dispensing "dangerous drugs." There also has been a television campaign by the NFL to put football on the right side in society's fight against drug abuse.

But with all this, drugs remain as much a part of professional football as the goalposts. Stimulants still are used by many players to get them up for games and depressants are used to bring them down. Others use steroids in hopes of increasing strength. And at some time during his career, nearly every player will have to use some form of analgesic to control the pain from an injury.

From conversations with trainers, players, congressional investigators, law enforcement personnel, physicians and pushers close to sports, a pattern of drug usage in professional football becomes clear. Regarding the stimulant drugs, there is a different pattern of usage compared to several years ago.

Bubba Smith, the defensive end of the Baltimore Colts, says, "When I need them, I get them from a private source . . . I'll only talk about myself. I use them [amphetamines] when I feel I need them . . . That's mostly when I have to play when I'm hurtin' and I feel I need some help."

"It's more of an underground arrangement now," said center George Burman, who has played seven years in the National Football League for the Bears, Rams and Redskins. Burman, a candidate for a Ph.D. in Economics from the University of Chicago, said, "During my career, I've seen a change. It used to be that you could get them [amphetamines and combination amphetamine and barbiturate pills] from the doctor or trainer or from another player. Now you can't get them from the doctor or trainer. At least not from what I can see . . . But the players get them. They have sources. They don't mind paying."

Burman said he began to notice a change about three or four years ago when exposes by several former players documented the use of drugs in football. At the same time, Houston Ridge filed suit against the Chargers and Ken Gray against the Cardinals, challenging the teams' methods of dispensing drugs.

"It's hard to estimate how many guys use them [amphetamines]," Burman said. ". . . Off the top of my head. I'd say that during my career it's varied at times. I think 33 per cent would be a safe figure, maybe a little higher at times."

Adrian Young, a sixth-year linebacker who played for the Eagles until last season and now is with the New Orleans Saints, has another viewpoint: "When I was with the Eagles . . . maybe 10 guys were regular users on game days. The stuff wasn't given by management . . . But they were available. It's a situation kind of like society in general. It went on, they were available, but nobody discussed it in the open."

". . . You always hear players talking about what it's like for guys on their club," added Cowboys' running back Calvin Hill. "I think the problem varies from team to team, trainer to trainer. We have guys who use them . . . I guess they got them from private sources. In writing, of course, the club's policy is against any kind of drug . . . It boils down, I think, to the integrity of the trainer. I think there are some trainers afraid for their jobs and they would do anything to please the coach."

Bobby Gunn, the trainer for the Houston Oilers and President of the National Athletic Trainers Association, says trainers who illegally dispense amphetamines face more than loss of standing in the NATA. They could face felony charges. However, several local narcotics officials around the nation said they did not have the manpower to investigate athletic teams.

Gunn said the volume of amphetamine usage is down from five years ago, but adds, ". . . It's still enough of a concern for us. We'll do anything to try to control it. If it means scare tactics we'll use them." Gunn also said that older players were more likely to use stimulant drugs. "A guy who has been in the league nine or ten years doesn't have the same body he had when he was 20. He's got arthritic joints, muscle problems. I can't sit in judgment. I can only warn."

Supply procedures around the league differ. "I've never made it a point to ask how guys get them," said defensive tackle Gary Pettigrew of the Eagles, "because it might seem like sticking my nose into something I shouldn't have . . . When I first came to the Eagles, it [amphetamine usage] was sort of an accepted thing . . . Now its not out in the open anymore. The team certainly doesn't give them out . . . But players have their ways."

Chris Fletcher, a fourth year safetyman for the Chargers says, "Football players are so well known . . . they can easily get a prescription from a doctor not connected with the team."

Linebacker Tim Rossovich, Fletcher's teammate at San Diego, agrees, but adds, ". . . People get so wrapped up in the whole drug situation that they hear about a player popping a pill and they equate it right away with someone shooting heroin in a back room . . . They should ask themselves the last time they took a sleeping pill or a tranquilizer or something like that."

Bill Bates, now the trainer for the Milwaukee Bucks of the National Basketball Association, was trainer for the New England Patriots until last spring. He was there 11 years. "The use of amphetamines," he said, "used to be rampant. They were all over like Good 'N' Plenty. Then a couple of years ago, the commissioner decided to get tough about it and things changed a little. I don't think usage is as rampant as before. But it's still a problem." Bates said the Patriots' players obtained their amphetamines from private sources. He also said, "At one time I was pretty sure one of the players was acting as a supplier."

Bates, who worked in a drug education program sponsored by the Massachusetts Attorney General's office, said most football players do not have a basic understanding of the drugs they use. "The tragic part of the whole thing is the ignorance level, how the use of amphetamines and other drugs can affect a player physically, what it can do internally. . ."

There are other risks. "When we have to operate for any reason after a game," said Dr. James Nicholas, the physician for the Jets, "we make each player sign a paper, stating whether he has been using amphetamines . . . or any brain energizers . . . If we didn't know, it could affect the operation . . . We haven't had much problem in this area, but they come clean when we confront them with what could happen."

The reasoning behind amphetamine usage is another variable. Burman said, ". . . The players who take them believe it does improve performance and that's something they may feel they need, for a lot of different reasons. On a certain day a guy may be playing against an all-pro and in his mind, he thinks he needs something extra.

"Another guy might be worried about his age and preserving his career . . . They also believe that the way they use them will minimize any harmful effects . . . The feeling is that limited usage during game days [exhibition and regular] in a season, and without using them at other times, they can beat any physical problems that arise."

Several players maintain, however, that the use of amphetamines isn't simply limited to game days. They are used for preseason scrimmages and there are reports of use during practice sessions.

And what is the reaction of the coaches to amphetamine usage? "Coaches sort of look the other way on this thing. The coaches figure if a guy needs them and getting them isn't connected with the team, then go ahead," Burman said.

Rossovich said, "I've had several coaches. One announced that it was forbidden. Another didn't say anything and there was another who said he didn't care."

Dr. Lawrence Golding, a Kent State University physiologist who has done extensive research on amphetamine usage in sports, said, "Many individuals using amphetamines need a 'downer' in order to sleep at night and so a cyclic pattern develops between 'uppers' to enable the person to perform and 'downers' to enable the individual to obtain the needed sleep."

Dr. Golding also said, "in athletic performance studies, the weight of evidence indicates that amphetamine does not improve physical performance . . . The athlete on amphetamine becomes keyed up for his event, which is desirable for optimal performance . . . Mental attitude certainly can affect performance and being mentally prepared for an activity or an event is desirable. Increased psychological preparedness appears to be the only rational justification for the continued use of amphetamine."

"I've heard all the disputes about whether uppers help or don't," Burman said. "I just wish the doctors would make a definitive study some time. It seems all the information they have now is confusing. Some claim it helps, then somebody else says you can't believe it because the testing methods are scientifically suspect."

The analgesics—anti-pain medications—are another problem. The analgesics are used in pill form or injections. "The rule of thumb we always used," Bates said, "was that we never injected them if there was a chance of further harm . . . but the whole question is not as simple as that. A lot of players feel they are being paid to play football, that their jobs depend on their playing even when they're hurt. I don't know what things are like on every team. I prided myself on not throwing anyone to the wolves. Many times, this didn't meet the approval of the coaches. They don't understand physiology that well, but they do understand winning.

"A lot of players accept injuries as part of their job . . . But there were times when injections were given under the club's ground rules that I asked myself what I was doing, what it was all about, what the people in the game were all about . . . I suppose my conservatism in medical matters like this was one of the reasons I left the Patriots. I had an argument with an assistant coach about injecting players for practice . . . I just wasn't going to prostitute my morals."

John Mazur, now an assistant coach with the Eagles, was the head coach of the Patriots when Bates' incident with the assistant occurred. Mazur said he had no knowledge of the dispute. "If it happened," Mazur said, "the assistant never talked to me about it and he never had any authorization to do something like that . . ."

Adrian Young said, "when you're in an injury situation, the outlook around the team is that you'll get yourself ready to play. It's an outlook of almost going to war. That's the kind of emotion they're trying to build up . . ."

"There's very much a psychology involved when you're talking about pain killers," Burman said. "Probably the biggest thing is that a player fears loss of his job if he doesn't play. He's afraid some other guy will come from nowhere and take his job. Then he's afraid, too, that the coach's attitude may change toward him if he doesn't play . . . A feeling builds up that you're letting the team down. It holds for practice as well as games . . ."

The deeper philosophical implications that pill popping and pain-killers present for pro football bother several players, including Mike Reid, a defensive tackle for the Cincinnati Bengals.

"Thes things [amphetamines and pain killers] are used," Reed said, "and I'm disturbed at the reasons. I think that some of the other things that go on comes down to the misplaced values in football . . . If a player feels psychologically that the usage of drugs improves performance, he's going to use them . . . There are a lot of external pressures involved in football like the Lombardi attitude of winning and producing . . . It's easy to lose sight of the real reason for participating . . . because of the pressure to win and succeed, the game becomes like the rest of society where anything goes to win . . ."

(Tomorrow: Drugs and professional basketball.)

AMPHETAMINE DOSAGE VARIES

Amphetamine is a central nervous system stimulant, and the psychological effects can produce alertness, euphoria and elation, plus a sense of greater concentrations and self confidence. Unregulated amphetamine usage also can produce restlessness, dizziness, talkativeness, tenseness, irritability, insomnia, confusion, anxiety, delirium, panic states, circulatory collapse, vomiting, diarrhea and abdominal cramps.

Benzedrine. Dexedrine, Dexamyl and Daprisal are the most common amphetamines used by football players. Dexamyl and Daprisal are combination amphetamine and barbiturate. Most of the commonly used capsules and tablets contain between 5 and 15 milligrams. Physicians have reported that dosage as small as two mg. can produce adverse effects in certain individuals. Severe reactions also have been reported at 30 mg.

Dosage among athletes varies. Adrian Young, now a linebacker for New Orleans admits using as much as 25 mg. per game at different times in his career. Washington center George Burman estimates dosage at "higher than 10 mg." per game.

—PADWE

EX-PLAYERS CHALLENGE USAGE AS LEAGUE PRESENTS AN IMAGE

Two court cases, one settled April 10, have challenged the use of drugs in professional football.

Houston Ridge, a former defensive end for the San Diego Chargers, will receive $260,000 in settlement of his suit. He had charged the team with administering him "dangerous drugs . . . without a legitimate purpose."

Ken Gray, a former offensive lineman for the St. Louis Cardinals, has filed a similar suit, scheduled to be heard in late May. The Cardinals released Gray in 1970.

The attorney for Ridge contended his client had been disabled in a game Oct. 11, 1969 against Miami. "At the time he received this [hip] injury," Attorney Robert Baxley said, "he had taken three Amber 2 tablets [combination amphetamine and barbiturate], which were given to him by the team trainer who had obtained the drugs from the team physician.

"Over the course of the years that Mr. Ridge played with the Chargers, they bought huge quantities of pep pills, sleeping tablets, tranquilizers and weight gaining drugs to mention a few. . . . My . . . investigation leads to the conclusion that these drugs were provided in large quantities to these professional athletes . . ."

Martin Green, the attorney for Gray, said at least five of Gray's former teammates, including cornerback Pat Fischer will testify at the trial. ". . . What I will try to show," Green said, "is the psychology involved in administering various drugs to these players."

Two years ago, the National Football League, working with the Bureau of Narcotics and Dangerous Drugs, introduced a number of public service promotional advertisements during NFL telecasts.

The TV spots featured players delivering anti-drug messages. The NFL denies that the advertisements were used to counter charges by ex-players that drug abuse was common in professional football. "The purpose was drug education," said Don Weiss, the league's director of public relations.

The league's public image regarding drug usage has provoked debate among some players, including the Cowboy's wide receiver Billy Parks. . . . "That's all part of the league's PR, giving the image for the youth. . . .," Parks said. "I understand the objective, trying to tell kids not to get involved with drugs. But I think the kids are smarter than they're given credit for. Personally, I don't take those ads seriously. . . . How can I? Most definitely, people in football use drugs. Yet, we promote the image we should be good clean cut kids who don't get involved with that stuff.

"Football isn't much different from other levels in society when it comes to drug useage. What's going on in corporations and other business places?. . . . The only difference is that businessmen and teachers don't go on television and pretend things aren't like they are." —PADWE

IN PRO BASKETBALL, DRUG USAGE LEADS TO WARNINGS AND WORRIES

(By Sandy Padwe)

Second of a series

The warning, primarily by phone, went to all the player representatives in the National Basketball Association. ". . . I told them," said Larry Fleisher, attorney for the NBA Players Association, "that there was too much at stake, that we've worked too hard, too long, to suffer any scandal."

That was mid-season, a difficult time for people like Fleisher, who had been hearing rumors about the level of drug usage—both for performance and in private life—among professional basketball players.

In one West Coast city, the narcotics bureau of the police department had been investigating an NBA player suspected of dealing cocaine. The investigation hasn't ended. Also there were two cases on Fleisher's desk. The Milwaukee Bucks had dropped Wali Jones and his healthy contract, claiming that Jones had lost weight and stamina and therefore could not physically play in the NBA any longer.

That immediately was translated around the league to mean that Wali Jones had a serious drug problem. The matter went to arbitration within the NBA.

Fleisher also had another case on his desk. Harold Fox, a rookie guard for the Buffalo Braves, and teammate Dick Garrett had been arrested in suburban Buffalo. They were in an apartment where marijuana was found. The authorities later dropped the case due to insufficient evidence. Garrett remained with the Braves but Fox was dropped and did not play again for any professional team even though Braves' coach, Jack Ramsay, last spring described him as an "outstanding prospect." The Fox case also went to arbitration in the NBA since the Braves, according to Herb Rudoy of Chicago, Fox' lawyer, stopped payment on the player's contract.

Drug usage in basketball appears to be of a different character than in football. Much of it results from the gruelling schedule in both professional basketball leagues.

". . . A lot of guys," said Nate Archibald of the Kansas City Kings, the leading scorer in the NBA, "feel if they can get high it will relax them . . . I don't say there's a problem with hard drugs among basketball players. But there's a lot of smoking [marijuana] going on and I think it's getting out of hand . . . You can't be at your best if you're doin' that before a game."

Archibald said the players are aware of the same rumors that had reached Fleisher's office. "The players," he said, "know there have been investigations. Things got pretty tight for a couple of weeks after those guys [Fox and Garrett] got arrested in Buffalo . . . There's a pretty good network of communication between the players and there are guys in and out of basketball you can buy stuff from . . . For basketball players it's easy because they have the money to get what they want . . . You get into a certain city and it's available."

Denver's Warren Jabali, who had played five seasons in the ABA, said there has been a change in drug usage patterns since he came into the league. ". . . When I first started," he said, "you could get uppers from trainers. Now you can't anymore. Maybe it's all the warnings . . . They bring in FBI guys, police and tell you that they're going to be checking . . . I knew a couple of people who used to be in the league who dealt cocaine. But I guess they got scared off by someone or someone found out about them. Anyway, they're not around anymore and they're better players than some of the guys still hanging on today. But I just can't imagine anyone taking cocaine and trying to play on it.

"What happens in a guy's social life after a game or before . . . I don't know for sure. There's a lot of guys around, all kinds of people. The climate of the whole nation is more open and objective . . . We're getting to the point where the whole thing [legislation of marijuana] is pretty strong.

". . . But you start talkin' cocaine or the real hard drugs and I don't think a basketball player, takin' the stuff in his private life, is goin' to stay around the league very long."

The Nets' Bill Melchionni sees amphetamine and marijuana usage in professional basketball as an answer, basically, to the scheduling problems. ". . . The pills," he said, "seem to be more prevalent now than when I first broke in [Philadelphia, 1966]. I know when I first came into pro basketball, the trainers had them. Then I missed one season (1968–69) and I know that when I came back it was really a shock to me to see how things had changed with the pills . . . Now it's different. You can't get them from trainers.

"Marijuana is more prevalent now, too. It's sort of like wine used to be around some playground games. You know, the guys would take some wine and get nice and relaxed. Well, you can't play a pro basketball game with wine sloshing around your stomach. So a couple of hours before a game, a guy might take some marijuana and get relaxed. This is a tense job and the schedule doesn't make things easier."

One coach in the ABA, a former professional player, is so worried about possible drug usage on his team that he admitted having the team's trainer check the players' luggage without their knowledge.

Richie Guerin is the general manager of the Atlanta Hawks. He was a player for many years and coached the Hawks until the end of last season. "Basically, at the later stage of my playing career," he said, "I took dexedrines sometimes . . . Not very often. Maybe about 15 times in all . . . I talked to a lot of doctors about it and I was told that used sparingly they could not be harmful. At one time it was my responsibility to be in charge of giving them out on our team. That way I could regulate it. But I don't think the players are using them much today. And I think I know my players pretty well."

Dr. Lawrence Golding, Kent State exercise physiologist who has studied the effect of amphetamine usage on athletes said several sports people, such as Guerin, have been misled about amphetamine dangers. "Some physicians," Dr. Golding said, "seem to encourage the use of amphetamines by telling athletes that they are harmless in normal doses . . . But the danger with athletes whether they're taking five, 10 or 15 mg., is what happens to them under circumstances of high performance and heat stress . . . Given under normal conditions amphetamines increase pulse rates and blood pressure. But playing a hard sporting event isn't a normal circumstance. That's why there's a danger involved that we just don't know that much about yet."

Larry Costello, coach of the Milwaukee Bucks, said policing amphetamine or any type of drug usage is extremely difficult. ". . . From everything that's happened this year, I guess you'd have to assume there's a problem . . . But how do you check it?", Costello asked.

"Our players don't get anything from our trainer. Who do you watch? The people in the lobbies? Have you ever seen the number of people who hang around a basketball team in the hotel lobbies? How do you know who they all are?" This has been a very difficult year for me. My most difficult."

In the exhibition season, the Bucks' Lucius Allen, who had two previous arrests on marijuana charges, and Kareem Abdul-Jabbar were arrested in Denver. Police said they found small substances of marijuana, amphetamines and LSD in the car in which Jabber and Allen were passengers. The charges against Jabber were dropped immediately but the case against Allen lingered a few months before the charges were dropped.

Em Bryant retired after the 1972 season, having played eight years in the NBA. He claims that most drug usage in professional basketball is "more of an individual thing related to injuries." But he claims the athletes are careful about using any type of pain killers or amphetamines. "It behooves a pro athlete to know to what extent he can abuse his body," Bryant said.

Both professional leagues have security forces able to check any drug-related problems. Jack Joyce, a former FBI agent, is the NBA's director of security. The league has a network of security men—usually retired FBI men or retired police officers—in each NBA city. "They are paid by us," Joyce said, "and handle any matter pertaining to security, be it drugs, gambling, anything like that." The ABA uses Fidelifacts, Inc., a security firm with offices in most ABA cities. Fidelifacts also is staffed mostly by ex FBI agents and handles ABA work on request of the league or individual teams.

The trainers and team physicians in professional basketball deny administering anything but prescribed drugs. "We give out pills to deaden pain," said Leo Marty, trainer for the Portland Trail Blazers and president of the NBA Trainers Association. "But that's on prescription . . . Our team doctors control all this . . ."

Marty denies that NBA trainers dispense amphetamines. ". . . If someone did and we found out we would take action against him, cancel his certification . . . But many of us have no means of policing things outside our own training rooms and teams."

Dr. Stan Lorber, physician for the Philadelphia 76ers, said NBA physicians have strong control over the dispensing of all drugs including pain killers, sleeping pills and medication for treatment of colds. ". . . I'm not blind to the world we live in." Dr. Lorber said. "In professional basketball, we're dealing with a community of young people. Young people smoke marijuana and take other drugs. Basketball players are people, no different from anyone else in society. So some of them smoke marijuana. We know that. We've also had players who were drunks. We also know that players can get drugs from other sources."

Apparently some players do. "There are always a lot of strange people around teams," said Billy Cunningham, formerly of the 76ers and the Most Valuable Player this year in the American Basketball Association. "You hear an awful lot of things about what the drug situation is today in sports . . . A lot of it isn't exaggerated . . . I'm concerned about it. What scares me is that I hope some of these guys don't ruin their lives . . ."

(Tomorrow: Drugs in amateur sports.)

SEASON DISAPPEARED FOR JONES, FOX

It was all very vague. And the vagueness led to a lot of damaging innuendo and rumor. The Milwaukee Bucks of the National Basketball Association suspended guard Wali Jones without pay. The Bucks contended Jones had lost weight and stamina.

Technically, it was a medical suspension. After the club physician reportedly determined he couldn't find a cause for the loss of weight and stamina, the medical suspension was lifted. Then Richard Phillips, Jones' Philadelphia attorney, said on Jan. 9 that the Bucks had placed his client on disciplinary suspension for "alleged curfew violations and other conduct detrimental to basketball."

Jones remained on suspension, Phillips said, without pay, for the rest of the season. Meanwhile the case was under arbitration within the NBA office.

But rumors do not wait for arbitration and the vagueness and the innuendo were damaging the credibility of an athlete who had worked long and hard with ghetto youngesters in Philadelphia and Milwaukee, warning them about the hazards of drugs. (The Bucks, meanwhile, were refusing all comment on the case.)

Oddly, Jones, one of the better guards in basketball for several years, could not find employment with any other team in either league. Bob Briner, general manager of the Dallas Chaparrals, the ABA team with the negotiating rights to Jones said, ". . . we couldn't agree on contract terms." But he also admitted, ". . . there were subtle comments . . . innuendo . . . about a drug-related problem . . . but we didn't really know . . . there was a cloud over him . . ."

Jones felt it, too. "I have to fight my own battle," he said. ". . . There have been all sorts of rumors about me . . . there have been ever since I got involved in the programs with the kids . . . I think a lot of this is political. Why would I want to ruin my own life,"

Jones wasn't the only NBA player who spent much of the past season in a strange form of limbo. Last fall, Harold Fox, a rookie, and Dick Garrett, a fourth-year man, were arrested in suburban Buffalo. Police in Amherst, N.Y., said the two Buffalo Braves players were in an apartment where marijuana was found. The charges were dropped against the two players. Garrett remained on the Braves roster. But Fox found himself cut from the team, his four-year contract suspended.

His attorney, Herb Rudoy of Chicago, said last week that NBA commissioner Walter Kennedy had ruled the Braves had the right to suspend Fox but they have to renew payments on his contract next October. Rudoy says he will appeal the ruling within the league. "I'm sure we will win,' he said. ". . . There's no proof at all that Fox used it [marijuana]. . . . If the team feels Harold is of bad moral character, . . . then why wasn't Garrett suspended, too? Maybe they thought Garrett was more valuable."

Garrett isn't very sure of his future, either. "My contract's up . . . and the way they're doing Harold. I don't know . . . I don't know what will happen . . . I don't know if the team is trying to make an example of him or trying to get rid of a big contract. . . . Ever since I was arrested, I'm trying to stay out
of trouble . . . Stay away from places that are suspect . . . But drugs are
of trouble . . . Stay away from places that are suspect . . . But drugs are everywhere . . . they're all over in society . . ."—SANDY PADWE

[From Newsday, Monday, Apr. 30, 1973]

GET HIGH ON SPORTS, NOT DRUGS—CONCERN GROWING OVER DRUGS IN COLLEGE SPORTS

(By Sandy Padwe)

Third of a Series

The National Collegiate Athletic Association, endeavoring to show its good citizenship, has been promoting a series of television advertisements which urge young people to "Get High on Sports, Not Drugs."

In Ithaca, N.Y., Herb Broadwell, the golf coach at Ithaca College, acknowledged that the NCAA's objective seemed noble but he had a question: "I couldn't quite figure out who they [NCAA officials] were talking to in the ads," Broadwell said. "Were they telling kids to stay off heroin and other drugs? Certainly that's a good message. But were they telling their own athletes to stay off steroids and amphetamines?"

Broadwell had a suggestion. He ured the NCAA to seek a signed statement from the appropriate athletic official at member schools stating that, "We as teachers, coaches and trainers will not supply, encourage or condone the use of any drug by any person except when it is prescribed for the treatment of an existing pathological state . . . Under no circumstances will we tolerate the use of medication for the purpose of stimulating performance or preventing fatigue."

The NCAA didn't adopt Broadwell's idea but has admitted there is enough concern within the intercollegiate athletic community over drug usage to provoke some action. So, possibly as early as June, the NCAA will begin testing athletes for drug use at selected championship events.

"We hope to be able to start at the track and field and baseball championships," said Bob Pritchard, athletic director at Worcester Tech and chairman of the NCAA's drug education committee. Pritchard said the NCAA will use urinalysis for its testing.

"We don't know if we have a problem," said Jim Wilkinson, who has handled much of the drug-related work for the NCAA office. ". . . This testing will be a way of finding out. We're not being naive about drugs in sports, we don't have our head in the sand. We want to see what's what . . . right now we don't have a specific program regarding punitive action if some of the testing proves positive."

In 1969, Pritchard, concerned over the stories and reports circulating about drug usage by college athletes, wrote to the NCAA suggesting an investigation into the problem. The NCAA made Pritchard the head of its committee on drug education. Pritchard has struggled since to develop the mechanism to determine how widespread amphetamine, barbiturate, steroid and analgesic usage is on the college level.

The committee also hopes to determine the source for the drugs and the exact effect drugs have on performance. It has been a difficult project. Much of the scientific data on the use of amphetamines and steroids is old and inconclusive, and Pritchard said he isn't certain the definitive report will be written for years.

"We're going to try and find out exactly what is happening," Pritchard said. "I don't know how successful our plan will be but we're going to send out 22,000 questionnaires to athletes asking them if they use any performance drug and the estimation of these drugs in helping them. It will be strictly an anonymous thing. They don't have to use their names. I know something like this might take years. At least it will be a start. Then we can move from that point."

Testing at championship events may not provide much of an answer for the NCAA. Dr. Donald Cooper, physician for the Oklahoma State University athletic teams and the 1968 U.S. Olympic team, said:

". . . I don't think there's that much of a problem with drugs when you're talking about quality athletes and the more successful teams. I'm not saying there isn't usage at that level but I think where you really find problems is with the teams and individuals that aren't doing that well.

". . . I don't honestly feel anyone knows for sure how much the drug scene has gotten into athletics. Usually where there is smoke there is fire, so I do feel we have a problem and one which is probably going on in a 'black market' style or an 'under the counter' type problem."

Last February, Cass Jackson, an assistant football coach at San Jose State College, resigned to become the head coach at Oberlin College in Ohio. Jackson said he was tired of the pressure and atmosphere of major college football. Drugs, he said, were part of the "atmosphere."

". . . There are coaches around who condone shots and painkillers," Jackson said. "Maybe all that works on the football player to a degree. I also think that a lot of the players are frustrated.

"Taking an upper gives him a good feeling, a nice feeling. He can go to practice then and sort of laugh to himself about all the screaming and yelling from the coaches . . . Maybe the players feel they need something extra to get through some of those practices. And maybe they think they need them for games because a lot of these kids will do anything to impress the pro scouts. Face it, there are a lot of football players who only use college football as a possible ticket to the pros.

"It's not only San Jose. I know too many other guys playing at other schools, kids I came in contact with through recruiting. They tell me the same kind of stories about what goes on at their schools. Maybe the amphetamines don't come from the trainers or team doctors but we all know what the situation is like regarding drugs in college these days. Kids can find what they want. If not from right on campus, then the areas near the campus."

The situation regarding drugs on and near the campus bothers other coaches besides Jackson. When Harry Litwack announced his retirement after 20 years as basketball coach at Philadelphia's Temple University, he said, ". . . In the '50s, it was the dumping of games that worried you. Now kids are getting into drugs. You have to keep on the move, make sure there's no problems like that . . .

". . . I'm not saying there was any type of drug problem with my players. But it would be silly to just say it didn't exist in sports . . . You read about things, hear about them from other coaches . . . You have to be careful."

Last winter, the Texas Christian University athletic department and football office expressed "shock" when a current TCU player and two players from the 1971 team were arrested and charged with the possession of cocaine. Later, the trio was re-arrested along with 10 others—non-football players—after an investigation by the Bureau of Narcotics and Dangerous Drugs. The investigation resulted in a six-count indictment charging a conspiracy to traffic in cocaine in Texas and Kansas. The case is in the courts now.

A BNDD agent in Dallas who worked on the case said he didn't think the football players were selling cocaine to other athletes so the drug could be used as a performance factor. Cocaine is a stimulant and an anesthetic and medical opinion varies about its use in athletics. Some doctors say it would be a good drug for an athlete to use if he were competing with minor injuries. Other physicians say an athlete using cocaine wouldn't have the body control he needs.

Drug usage among college athletes follows the same pattern found in pro football and pro basketball. There is usage for performance and usage in a social context away from the field.

Cyril Baptiste was a talented basketball player at Creighton University in Omaha. While a college student, he became a heroin addict, managed to play well enough despite his physical problems and joined the Golden State Warriors two years ago through the 'Hardship' draft.

But by the time he arrived in San Francisco his condition had so deteriorated that he couldn't pass the Warriors' physical and his professional career never began. "It was a sad thing to see," said Al Attles, the Warriors coach. "Here was this kid who had all the talent in the world . . . just wasted."

Today, Baptiste, with the help of his family, reportedly has conquered his habit and has had a try out with the Philadelphia 76ers. He may play professional basketball again next year.

"I don't think Cyril's problem started on the campus," said Eddie Sutton, the Creighton coach. "I think it started because of the people he associated with in Omaha . . . All I know is that it happened. A coach likes to think that things like this can't happen to one of his players . . . We take precautions . . . we have rap sessions . . . the NCAA sends out all sorts of literature . . . we have doctors, trainers . . . And then it comes down to the fact that you may never know what is really happening, no matter how hard you look."

The Baptiste case was not related to performance but there are several schools which have had problems involving athletes using drugs to seek a playing edge.

Two years ago, 13 members of the football team at Delaware State College were suspended after urinalysis revealed traces of morphine, amphetamine and phenobarbital in their systems. Five players who had prescriptions for the phenobarbital later were reinstated.

At the University of California, Jim Calkins, the football captain, polled 50 members of the 1969 team on their drug usage habits pertaining to performance during games and practice. He learned that 48 per cent used amphetamines, 62 per cent used varying forms of depressants and 28 per cent used steroids for body building. Starting players at Stanford and USC later publicly supported Calkins' findings about usage for games and practice with similar descriptions of amphetamine usage at their schools.

Billy Parks, who played college football at Long Beach State, and is a third year wide receiver for the Dallas Cowboys, said, ". . . [amphetamine] usage and pain killers have been an accepted thing since I was in college."

"A lot of coaches," Dr. Cooper said, "can seem very concerned about this problem but maybe they don't really want to know what goes on . . . But you can't indict all the coaches. In some ways they are almost men of desperation. It comes back to society, to the alumni, to the pressure put on the teams to win.

"The thing that worries me about amphetamines is that players might start using just five milligrams and then because they gradually start building a tolerance, they wind up in a few months using 30 mg. . . .

"It just isn't a college thing. I do a lot of speaking, get around the country quite a bit. I talk to a lot of athletes, college and professional. Baseball players tell me that when they have to play 162 games a year there comes a time when they have to reach back for the adrenal glands and they find they need something extra. I've had major league baseball players tell me they need an emphetamine sometimes just to get out of bed in the hotel so they can go to the ballpark.

". . . I personally do not believe amphetamines or the amphetmine-barbiturate combinations can make any athlete perform better than he could drug free . . . There are physicians who say they believe drugs do increase performance and are an unfair advantage. The studies are inconsistent and they have yet to show me a series of studies that confirm it.

". . . Now there are some athletes who may think that a drug is helping them and they may actually think they're playing better just because of the psychological effect of taking something. That factor has to be considered in this whole problem."

Steroids, hormones taken to increase strength and muscular growth, present another potential problem for athletes. Normally, they are used when athletes are in weight training programs. Athletes who use steroids in heavy dosage or for prolonged time periods have been subject to testicular atrophy, enlargement of the prostate, liver problems and decrease in sperm count.

Football linemen, wrestlers, weightlifters, basketball players and varied track and field athletes have been known to use steroids. Olympic champions such as shot-putters Dallas Long and Randy Matson and Hal Connolly, hammer throw, reportedly used steroids and enjoyed considerable success. But several physicians, including Dr. Dan Handley, chairman of the Olympic medical and training services committee, claim the steroids don't help and are harmful.

Dr. Hanley said, ". . . The claim that steroids enhance performance is unproved; the companion fable that increased weight means increased strength also is unproved . . . Steroids do increase weight in normal young adults but the weight gain probably represents mostly fluid retention."

Desipte the debate over the pros and cons of steroids as a performance factor, usage continues, not only among American athletes but European competitors as well. Pelle Svensson, a member of the Swedish Greco-Roman wrestling team at the last Olympics, charged in an "Open Letter to Swedish Sports Bosses," that Kjell Isaksson, the excellent Swedish pole vaulter, and several other Swedish athletes did not perform well in Munich due to steriod overdoses. Svensson's charges weren't isolated. Protests and controversy over drug usage seemed almost a daily ritual in Munich for weightlifters, wrestlers and swimmers.

Can drug usage be controlled in in athletics? Dr. Lawrence Golding, a Kent State University physiologist who has intervied hundreds of athletes for several studies on amphetamine and steroid usage, said, ". . . Athletes are undaunted by fears and threats. The results of interviews . . . show that the desire to win is greater than either the fear of exposure or the possible harmful side effects . . . Too many athletes witness excellent performances by peers who take [amphetamines and steroids] and often credit the drug for these performances."

And when an athlete's peers are achieving success with the aid of drugs, it is hard to convince others that the scientific data concerning performance is, at best, inconclusive.

(Tomorrow: Government action).

[From Newsday, Tuesday, May 1, 1973]

Drugs in Sports—Congress Steps Up Drug Probes

(By Sandy Padwe)

At first, the Senate Juvenile Delinquency Subcommittee seems an unlikely place for an investigation into drugs and sports.

So does the Congress of the United States. But there are two congressional subcommittees working on the subject and the office of a third congressman has become involved through a study of injuries in athletics.

Sen. Birch Bayh's (D-Ind.) Juvenile Delinquency Subcommittee hopes to begin hearings by early June. The session will be a follow-up to general hearings held about the drug problem and American teenagers.

Bayh's subcommittee received a lot of mail when the general hearings were held. John Rector, Deputy Chief Counsel, said the senator was surprised to learn that some parents felt a drug problem existed in sports, too.

One of the parents, Mrs. Lucy Santos of San Leandro, Calif., charged that drugs had been administered to Pop Warner League football players (ages 11 to 14) for weight control. She asked for an investigation. (See letter.)

Meanwhile, the subcommittee staff was aware that several name athletes had been arrested and convicted on drug charges and that books had been written detailing the use of drugs in various sports. "Professionals have a big influence on kids and that's important to remember," Rector said. "'The senator's intention in this area is to inform people of what is happening.

"In our view . . . this particular area [drugs and sports] is important to look at because it's part of something we don't normally associate with drug abuse. So often, people isolate freaky kids when it comes to drugs but using drugs in sports is not just something so-called freaky kids do. What the letter [by Mrs. Santos] asks can be a starting point but once the hearings start, they won't be limited in scope to kids' sports."

On the House side of the Congress, the Subcommittee on Investigations, chaired by Rep. Harley Staggers (D- W.Va.)., has been researching the subject for nearly a year. Last fall, it sent investigators, including retired FBI agents, to delve into drug use in professional football. It also has investigated basketball, baseball, hockey and amateur sports.

"We haven't come to a final decision on what direction we'll eventually take," Rep. Staggers said. "We've been in constant touch with the sports world. I've been alarmed about the problem. We know it's growing.

"What I'd like to see is the league offices try to police their own sports and do something about our findings. If that doesn't succeed, maybe then we'll have to go to full blown hearings. But I'd prefer not to see that at this point."

Rep. Staggers' subcommittee began its investigation after preliminary reports defined the problem for him. "I am not referring to restorative drugs or legitimate medical treatment," he said. "I am talking about drugs which have highly questionable clinical use and which have been described as dangerous.

"They include amphetamines . . . and anabolic steroids taken to increase weight and improve strength. Medical authorities are in general agreement that the use of drugs such as these in althletics may produce serious physiological side effects and even death."

Another congressman, Rep. Ronald Dellums (D-Calf.), also has been active in the field of athletics, specifically athletic injuries. Dellums worked with a group called "Sports for People," an organization which began investigating athletic safety procedures after the 1971 dealth of Billy Arnold, a football player for the University of North Carolina. Arnold died two weeks after collapsing during a pre-season practice session.

Dellums introduced an amendment to the Occupational Health and Safety Act titled, "Athletic Safety Act." "Sports For People," meanwhile, sent out a questionnaire to more than 400 athletes, coaches, writers and administrators trying to define for Dellums' office the main areas of concern regarding safety in sports.

There were 110 respondents to the questionnaire and 75 per cent listed the major problem as drug usage, specifically, "the use of drugs such as anabolic steroids and amphetamines to improve performance or to be competitive and the use of pain killers to get players back into the games."

"Injuries," according to the "Sports For People" survey, "are not felt to be the primary problem in contemporary athletics. Injuries are merely symptomatic of a much larger concern, an index of the extent to which we have allowed primarily the major sports to become more concerned with winning than the health, welfare and needs of each individual player. The areas of greatest interest and concern to those responding emphasized that the values and priorities existent within our society—winning in particular—are magnified in the sports arena through a high-pressure system, resulting in an increasing number of abuses and injuries."

THE PILL

There's a little bag of tricks
And in that little bag of tricks
Is a little yellow bottle
There are red ones and blue ones
  and multicolored ones . . .

—Former NBA player Tom Meschery in his book, "Over the Rim," 1970

A Mother's View

The following remarks were contained in a letter from Mrs. Lucy Santos of San Leandro, Calif., to the Senate Juvenile Delinquency Subcommittee, chaired by Sen. Birch Bayh (D-Ind.):

Senators, All Concerned:

I am a mother of two young boys writing in deep concern of the drug problem among our youth . . . I would like to point out that in our All-American sports we have a lot of drug abusers . . . It's on the increase as sports like football become more physical, tense [along with] the attitude of "winning at all costs."

My real concern lies in the so-called Pop Warner Football . . . 11 to 14 . . . Drugs, pepper-uppers, speed, pills to keep weight down (boys 14 can not weigh over 140 pounds) are being provided to these boys . . . Both my boys played last year (1971). My oldest (14) had a weight problem . . . Information has leaked out that before each game they [the players] were given pills . . . How can a parent be sure what kind of pills or medication it really is . . . the coaches will never tell.

Sports are supposed to build good character and good health as well as provide fun in a game. All this is gone. The pressure to win is so great that the coaches not only bawl them [the players] out if they lose but insult them, use abusive language and tear them down. The coaches will do anything or go to any extent to make his team win, even drug young children to keep them going . . . The boys are also told to clobber them [the opposition], kill them, punish them. They claim that when they are drugged, they don't feel anything anyway . . . I say that a thorough investigation is due now before this gets out of hand.

5 College Athletes Seized in Vegas Raid

Las Vegas—A nacrotics raid on the Las Vegas campus of the University of Nevada yesterday resulted in the arrests of 22 persons including five varsity athletes, one of whom was charged with sale of heroin and marijuana and possession of marijuana and a hypodermic device.

The athletes were Dan Cunningham of Salinas, Calif., a basketball player charged with the sale of heroin and marijuana; Larry Spickert, a baseball player, charged with possession of marijuana and dangerous drugs; Eddie Taylor, a basketball player, charged with possession of marijuana; James Starkes, a football player, charged with possession and sale of marijuana; Donald Weimer, a basketball player, charged with sale of marijuana and possession of amphetamines.

According to Patrick Stevens, supervising agent for the state division of narcotics, a vehicle was seized during the raid, along with weapons which included a rifle, machettes, hunting knives, a tomahawk and a bullwhip. Stevens said agents found substances believed to be hashish, marijuana, dangerous drugs, LSD and "all kinds of paraphernalia."

Stevens said there had been many reports of drug use on the campus. After the raid Stevens said, "I've never seen anything like it. The thing that impressed me was the openness of it. The stuff was just lying around in jars and bags."

APPENDIX 4

[From the St. Louis, Mo., Post-Dispatch, June 19, 1973]

Pro Teams Running Scared On Drugs

"Hope springs eternal that someone will find something that will make the weak stronger, the slow faster and the dull brighter. But . . . a normal, well-fed human being can never be improved upon by a drug."—Dr. Donald Cooper, United States Olympic team physician, 1968, and one of the nation's foremost research specialists in the area of drugs and the athlete.

First of A Series

(By Bill Beck, of the Post-Dispatch Staff)

The use of drugs by big-time athletes doesn't make the mind-bending story today that it did a couple of years or so ago.

Disclosures of the late 1960s alerted fans, coaches, owners and, most important, the players themselves to the dangers of drugs.

Now, drugs that once were available and, in a few cases, actually urged on athletes are no longer to be had in the training rooms, although they still are available on the street.

Apparently, drug abuse among athletes in the St. Louis area existed a few year ago—but not to the degree that it flourished elsewhere.

Dave Meggysey, former football Cardinals linebacker, applied the lash to the Big Red management unsparingly in some areas in his book "Out of Their League." But about drugs, he said, "I rarely used them as a pro . . . I wanted to meet this challenge on my own without the help of any drugs."

More pointed statements about drug abuse in pro sports came in a book, "They Call It a Game," by former Cleveland Browns defensive back Bernie Parrish and to a certain extent in another book, "Over the Rim," by pro basketballs Tom Meschery.

The incidents they recounted did not involve St. Louis teams, though the reader could not be blamed for inferring that such abuses were general.

Indicative of the present tendency to embellish findings on drug abuse in sports were the news service accounts of the recent reports by a congressional subcommittee that had investigated drugs in athletics over the last year under the direction of Representative Harley O. Staggers (Dem.), West Virginia.

The news service stories said that Staggers found "widespread and rampant use and abuse of drugs" among professional athletes.

"We didn't say that at all," protested Mark Raabe, an investigative lawyer on Staggers staff. "It was pretty astonishing to us what that story built into. We said that drug use in some areas was alarming."

Raabe would not say whether instances of drug abuse were turned up in St. Louis or even whether any St. Louisans were interviewed. Nor would he disclose the number of interviews conducted.

"Could you say whether the number of witnesses was nearer 20, 100 or 500?" Raabe was asked.

"We aren't saying," he answered.

His response to questioning about drug abuse was not really surprising. It's a touchy topic, although not everyone finds it touchy for the same reason.

The Staggers subcommittee held closed hearings and subsequently reported only in generalizations because it felt that public hearings might have led to wider drug use. "Aspiring young athletes emulate the actions, habits and even superstitions of their sports heroes," Staggers said.

Later, though, the subcommittee made several specific recommendations, including one that the National Football League use urine analysis to determine if its players are using drugs.

Parrish, whose book described a belief in drugs that rivaled superstition, agrees with the Staggers philosophy and has had second thoughts about his book's vivid chapter on drugs.

"I've got a 9-year-old son," said the former Cleveland pro, who now is a Teamster employe at the unions Pevely, Mo., recreation complex. "When he's old enough to read my book, I don't want him to say, 'I can take pep pills. Dad did it.' "

Some team owners may feel that there are even more compelling reasons to avoid the topic.

A recent out-of-court settlement of $260,000 was won by Houston Ridge, a former San Diego Chargers defensive linemen who allegedly suffered bodily damage when playing with the help of drugs given him by the team

And former Big Red offensive guard Ken Gray is suing the Cardinals for $3,000,000 on the ground that they gave him illegal and dangerous drugs without telling him of their danger. A jury trial in the case has been set for Nov. 5. Codefendants in the suit are team physician Dr. Fred Reynolds and former trainer Jack Rockwell.

It is not surprising that the Big Red official family is hesitant about giving anything other than name, rank and serial number when questioned about drug abuses. In this, they are typical of officials throughout sports.

However, some general facts do come into focus:

(1) Four families of drugs are involved. They are amphetamines (pep pills or "uppers"), anabolic-androgenic steroids (growth pills, powders or shots), barbiturates (depressants or "downers") and novocain or similar "freezing" agents.

(2) "Abuse" implies the use of drugs to get a player ready to play rather than the use of drugs to treat any injury that he might have suffered.

(3) Team physicians now think not only twice but many times before prescribing drugs for athletes.

(4) Amphetamines and barbiturates were available, seemingly for the asking, in some pro training rooms as recently as three years ago.

(5) These substances are not freely handed out or even available in training rooms now. Yet, they are easily available on the street.

The term "use of drugs" is far different from "abuse of drugs," but recent furors have made them one in the minds of the public—and even in the minds of some players.

This confusion is increased by the great number of drugs that are available, the wedding of drugs (an antihistamine mated to an amphetamine, for example) and the conflict between the commonly used and the commonly abused varieties of steroids.

Cortisone is a steroid produced by the body, but not in sufficient quantities to bring about the rate of healing required by athletes. However, it can be derived from the adrenal glands of sheep and given in the form of shots or pills. It is used both in and out of athletics and, when used as directed by a qualified physician, is considered helpful rather than harmful.

Growth steroids are synthetic male hormones that bring about a temporary increase in weight and muscular development in adults that disappears when treatment stops. Most experts say that they have no place in athletics.

If taken over a long period, a growth steroid could cause more rapid development of an incipient cancer, liver damage and atrophy of the testicles, the National Collegiate Athletic Association has reported. There is evidence also that a younger athlete could permanently stunt his growth by using the substance. Premature closure of the growing plates in long bones could occur.

Dianabol is one such steroid, and it figured prominently in the Ridge case. Ken Graham, formerly a safety with the Chargers, accused Sid Gilman, then the team's coach, of instituting fines for players who refused to take the substance. This was not linked, however, to the bone chips in Ridge's hip that caused his disability.

Among football Cardinals interviewed, none said that he had seen Dianabol used, let alone had it thrust on them as part of a training program.

Tight end Jackie Smith reacted sharply to the suggestion.

"That's asinine," he said with a snort. "I could appeal to anybody. What do they think we are, a bunch of cattle? We don't have to take anything we don't want. I'd tell them where to stick it."

Smith, a mere 205-pounder when he first tried to make the Cardinals' roster 11 years ago, would have been a good candidate for Dianabol, had the Big Red been interested in using it. He is now a strapping 240-pounder.

Fred Wappel, trainer for University of Missouri athletic teams at Columbia, remembers one incident involving a growth steroid and the MU football team.

"A specialist from our medical school was treating Norm Beal with Nilevar, which was an anabolic agent," said Wappel. "It had no effect on him."

The little running back from Normandy tried out with the Cardinals in 1962 after his graduation. When he was with the Big Red, he was no longer using the steroid, Rockwell said.

Wappel, chairman of the Big Eight Conference committee on the medical aspects of sports, said that there was increasing concern about the use of Dianabol and similar substances by weight men on track teams.

"Why else do they look like blown-up innertubes?" asked Wappel, who said that the case of a shot putter known to be using such drugs came under discussion at a recent Big Eight seminar.

"But they (the steroids) are being given to him by his father, who is a physician in California," said Wappel. "What can we do about that?"

Sprinters in both college and professional track often use Butozolidin, the synthetic steroid that caused Dancer's Image to be set down after apparently winning the Kentucky Derby in 1968.

But Butozolidin is a legitimate analgesic agent for humans used to soothe arthritic and rheumatic pains. Joe Pollack, Post-Dispatch movie and restaurant reviewer, takes it for the gout, for instance.

From this, at least one thing is clear: If Pollack ever wins the Kentucky Derby, he probably will have to forfeit the purse.

(Next: Amphetamines.)

[From the St. Louis, Mo., Post-Dispatch, June 20, 1973]

PEP PILLS AND PERFORMANCES: IT'S ALL IN THE MIND

"I wish I'd never taken the first pep pill. But if I were a cornerback today and knew the receiver I had to cover was on pills, I might take them again so I could cover him."—Bernie Parrish, author of "They Call It a Game" and former cornerback for the Cleveland Browns.

Second in a Series

(By Bill Beck, of the Post-Dispatch Staff)

Sports fans, disturbed by a recent burst of news stories suggesting that their favorite athletes might be drug addicts, would be mistaken if they concluded that—in most cases—drugs were being used by athletes for the pleasure that they might produce.

Most of the players who do use drugs apparently do so in the vain hope that their performances will be enhanced.

Dr. Donald Cooper, team physician for Oklahoma State University and a nationally recognized authority on drugs and the athlete, has concluded after research that amphetamines (pep pills) only make an athlete think that his performance is superior. Actually, it may be routine or below par.

Bob Bauman, trainer for the baseball Cardinals and St. Louis University, with 46 years of experience behind him, thinks that amphetamines may have got into sports by way of baseball.

"They were sometimes recommended to a player with weight problems," he said. "Maybe they didn't help him reduce, but he got the idea they gave him more pep. So he told a thin guy about them."

But Dr. J. G. Probstein says that he never heard of amphetamines in the distant days when he was ministering to the aches and pains of the old St. Louis Browns, even though amphetamines apparently were present in sports long before then.

A pamphlet reflecting the views of Cooper and published by the National Collegiate Athletic Association places the first drug-connected sports death in the late 1890s, when a British cyclist died from misuse of Ephedrine.

Pep pills probably are more common in sports than any other potentially harmful drug. Baseball, football, track, basketball, boxing, tennis and hockey are all sports in which super energy is a plus.

Officials of the football Cardinals are reluctant to discuss the use of amphetamines or any other drugs because Ken Gray, a former offensive lineman for the Big Red, is suing them for $3,000,000, alleging that he was caused to take harmful drugs.

However, Cardinals players did discuss pep pills guardedly.

Johnny Roland, a running back with the team since 1966, said, "You used to be able to get Dexadrine or any kind of upper. They weren't sitting out, but you could get one.

"I never took one because, as an offensive back, I had to remember the plays, listen to the audibles, know the snap count and all those things.

"In college (the University of Missouri), I took a bennie once so I could study all night. I got it from a medical student. But you go too fast. I know if you're speeding on an upper, you can't concentrate. You'd never pick up an audible."

Roland said that the Cardinals had cracked down and that pep pills had been banned for the last three years.

Jackie Smith, 240-pound tight end for the Big Red, said that he also remembered taking a pep pill as a study aid in college but had taken none as a member of the Cardinals.

"I'd be scared to take one on the field because I'm excitable anyhow. I'd be afraid of what might happen. I'd pop.

"Sure, some guys took 'em—mostly guys who were here one year and gone the next. Those pep pills put you out of touch. Most guys run away from drugs.

"Most of us don't need to take pills to get ready to play. We don't stand around before a game and throw up for nothing. If you can't get yourself ready, you shouldn't be playing."

Ernie McMillan, Big Red offensive tackle, said, "The Cardinals have taken the position that you just don't get any pills. I can't even tell you what they look like. The only time I ever heard very much talk about pills was in college (at the University of Illinois)."

Commenting on a recent investigation by a congressional subcommittee headed by Representative Harley O. Staggers (Dem.), West Virginia, the veteran tackle said, "Those cats are about five years late."

Defensive back Roger Wehrli, who joined the Cardinals in 1969 and is therefore a comparative newcomer, said that he had never seen an amphetamine and that trainer Johnny Omohundro "even keeps the aspirin locked up."

Bob DeMarco, dismissed by the Big Red in 1969, said that pills could be had when he was with the Cardinals, but only on request.

"I never used 'em," said the center, who went on to play first string with the Miami Dolphins and last year with the Cleveland Browns. "That's because I took one in college and thought it was going to kill me. My heart was jumping out of my chest on the flight home.

"It's a new era now. They had pills at Miami but not from the trainer. At Cleveland, there is absolutely nothing."

Mal Hammack, who played both offensive and defense for the Big Red before retiring in 1966, said that pills were available in the Cardinal's training room and that he took one once.

"I didn't get in the game, but I danced all night," Hammack joked.

Actually, he did play on that occasion.

"I took the pill in the hope it would improve my performance, but it didn't and I never took another," he said.

Pep pills are not in the official picture for the baseball Cardinals, according to Dr. Stan London, the team physician since 1968.

"When they have appendicitis, we operate. When they have sore throats, we give an antibiotic," London said. "We treat them as we would treat any other person.

"But we don't write prescriptions, and our trainer doesn't carry the kind of drugs you're talking about."

Probstein, physician for the hockey Blues for the last six years, said the same thing about amphetamines—not in supply.

Blues trainer Tommy Woodcock says that the Canadian athletes who make up the National Hockey League's teams are less likely to take pep pills than Americans because they have more self-discipline.

"There is no drug problem with self-discipline," said Woodcock, who is a New Englander. "It's all a matter of which you'd rather take—a pill or a five-minute walk. With us (Americans), it's too often the pill."

The National Collegiate Athletic Association has reported that amphetamines can mask dangerous fatigue, constrict blood vessels, cause aggressive behavior and produce nervousness, acute anxiety and insomnia.

Amphetamines figured in a $260,000 out-of-court settlement won by former San Diego Chargers tackle Houston Ridge, a large part of which came from team physician Dr. E. Paul Woodward. He had been accused of malpractice in Ridge's suit.

Before a 1969 game with Miami, Ridge allegedly took three bennies, a muscle relaxer and pain pills—all handed out in the San Diego training room. He did not feel a hip fracture when it occurred late in the game. And he walked about with the fracture for 10 days afterward until the hip was X-rayed

After Ridge's settlement, it is little wonder that amphetamines have disappeared from most, possibly all, NFL training rooms.

Omohundro, who succeeded Jack Rockwell as Big Red trainer before the 1971 season, still remembers a veteran player who was picked up by the Cardinals. Immediately, the player demanded his ration of pills from the "candyman."

"When I told him we didn't keep 'em, he couldn't believe it," said Omohundro. "Finally, he said, 'Well, what good is a candyman who ain't got no candy?' "

(Next: Pain-killers.)

[From the St. Louis, Mo., Post-Dispatch, June 21, 1973]

RIDGE SUIT MADE NFL MORE WARY OF DRUGS

"There is a notion in this country and all over the world that there are 'super' drugs that can do things for people that they can't do for themselves. One thing should be made clear: There is no drug that can safely make anybody better than normal."—The National Collegiate Athletic Association, 1972.

(By Bill Beck, of the Post-Dispatch Staff)

Third in a Series

The National Football League is so conscious of its image that it banned beer in locker rooms and even stamped out post-game champagne celebrations.

But despite its concern about what effect even innocent acts might have on youthful sports worshippers, it did not react to spreading drug use. This was called to public attention in books by athletes that apparently made better reading than scholarly reports by medical authorities who had raised the issue earlier.

The books seemed to run drugs out of sight in the NFL, if not out of use. The league was made even more sensitive on the subject by the case of Houston Ridge, a former San Diego Chargers defensive lineman whose $1,500,000 lawsuit against the Chargers was settled out of court recently for $260,000.

Testimony offered in court in the Ridge case and later before the California Board of Medical Examiners disclosed that the Chargers were supplying as many as 10,000 pills a year to players.

These were provided through a bulk delivery system involving a San Diego pharmacist, Chargers trainer James Van Deusen and team physician Dr. E. Paul Woodward, according to the testimony.

Testifying in his own defense, Dr. Woodward said that the system was in effect before he joined the team but that he did not change it.

Van Deusen testified that he knew which players wanted what pills and slipped the pills into envelopes, which were placed in the recipients lockers.

For the sake of the records, the huge supplies of drugs were directed to members of the team's administrative staff under prescription from Dr. Woodward.

Ken Graham, former Chargers safety, testified that Sid Gillman, then the head coach, instituted a system of fines for players who would not take Dianabol, a potentially dangerous growth steroid. This charge was denied by receiver Lance Alworth, who said that there were no fines or threats but that players were encouraged to take the pills.

Ridge, who played with a hip fracture in a game against the Miami Dolphins in October 1969, is still on crutches.

Aside from a terse announcement of the settlement, the story of the incident might never have come out if it had not been for Jack Murphy, San Diego Union sports editor. Murphy doggedly searched out the testimony and the depositions and, with "a heavy heart," made the facts public.

Before the testimony was generally known, it had seemed likely to many observers that Ridge, who was suffering from a hip injury, had had injections of Novocain to deaden the pain and did not realize that he was in no condition to play when—by Ridge's testimony—Gillman asked, "Where is that damn Ridge? Can he run at all?"

Ridge testified that Gillman was concerned about the Chargers' pass rush at that point because the Dolphins were on the San Diego 20-yard line and driving. Ridge went into the game.

Although Ridge was on crutches the next week, he was not X-rayed until 10 days after the game. Then, it was discovered that he had suffered serious damage to the hip.

Actually, Novocain was not involved. According to the testimony, Ridge had taken three powerful amphetamines and an assortment of other drugs before the game and was virtually insensible to his injury.

The use of Novocain itself remains in what might be called a gray area in any black-and-white discussion of drugs in athletics.

For example, Novocain is used by most Big Eight Conference football teams, including the University of Missouri. It is used also by the football Cardinals, although not by the baseball Cardinals or the Blues.

However, Dr. Stan London, physician for the baseball Cardinals, doesn't rule out its use.

"If it was the seventh game of the World Series and Lou Brock had a sore hand and I was sure there was no danger, then, yes, we might do it," London said.

But Mike Shannon, former Cardinals outfielder and third baseman who now is a broadcaster for the club's games, said, "I can remember begging for Novocain in my sore hand, but they wouldn't give it to me."

The pain-killer apparently is used much more frequently in football.

Asked whether he had ever received Novocain, Larry Wilson, former star safety of the football Cardinals and now a scout for the team, snapped, "Hell, yes!" But he said that it was administered only where there was no possibility of aggravating the injury and then only on request.

Jackie Smith, Big Red tight end, also said that he was no stranger to Novocain, and he also pointed out that it was never used to deaden pain from a structural injury—one that could be aggravated.

Because of the frequent cuts and other injuries suffered by National Hockey League players, it would seem that Novocain might be in frequent use in paving the way for all those stitches. Dr. J. G. Probstein had somewhat the same idea when he became physician of the Blues six years ago, but he found out otherwise.

"If there is a difference between Canadians and Americans," he said, "it's that Canadians have a higher threshold for pain. They (the Blues) always refuse Novocain.

"Usually, less than a minute elapses between the time they are hurt and the time we get them. The injury probably is still numb."

With the heat on the drug problem in big-time sports, even normal medication—let along Novocain—is subject to suspicion. Team physicians are faced with the possibility of over-reacting—denying to an athlete a drug that they would readily prescribe for, say, an insurance salesman of the same age and health.

Even sleeping pills are suspect, though there are restless players who sometimes require them to sleep the night before a big game or to relax after a key contest. Many golfers on the professional tour use muscle relaxants before they play.

The National Collegiate Athletic Association is concerned even when harmless pills are used as a psychological crutch.

The trainer of a Midwest college team scheduled to play at Colorado University sensed the concern of players and coaches about playing in the high altitude of Boulder and filled some capsules with brown sugar.

"I'd sidle up to the players . . . and whisper, "Take one of these, it'll give you a lift," he recounted.

On the flight home after a victory, he said, he had trouble convincing the players that they'd taken only brown sugar.

But . . .

"The fact that they would take the capsules without knowing what was in them scares me," complained an NCAA officer after hearing the anecdote.

(Next: Safeguards.)

[From the St. Louis, Mo., Post-Dispatch, June 22, 1973]

CONGRESS MAY PRESSURE SPORTS INTO DRUG TESTING

"I would be for spot checks or any other infallible tests that would stop the use of drugs from the street or any other source in the National Football League. I'm for anything that would put our team and our league in the highest repute."—Jim Bakken, Big Red placekicker and former player representative.

(By Bill Beck, of the Post-Dispatch staff)

Last of a Series

Under the watchful eyes of state racing officials and wisecracking fans, grooms on hands and knees armed with cups pursue frisky greyhounds until urine samples are obtained after races at dog tracks.

This is an effective means of discouraging the use of stimulants that might alter performances and is not unlike the system used for the same purpose at the 1972 Olympic Games in Munich.

It also might be only foolproof method by which professional sports teams can protect themselves against drugs—especially so-called uppers and downers—which athletes, in search of the ultimate performance, bring in off the streets.

Now that such drugs are not available in training rooms as they obviously once were, why doesn't the sports establishment invoke such controls before Congress does it for them?

Such a procedure would be demeaning, especially to the vast majority of athletes to whom drug use is repugnant. Even those, such at Bakken, who favor tests as the lesser of two evils wonder if this might not be an unconstitutional invasion of privacy.

Although Olympic officials were able to announce after the Munich Games that more losers than winners were detected in the drug tests, adding to the mounting weight of evidence that drugs can't supply performance that nature didn't put there in the first place, there were drawbacks.

Rick DeMont, an American swimmer, was obliged to return his gold medal because traces of a drug called epinephrine turned up in his test. The wedding of drugs—one to dry up a sinus or asthmatic problem and ephedrine to ward off the drowsiness the first might induce—did not enhance DeMont's performance at 12 parts to 1,000,000. But a rule was a rule.

Representative Harley O. Staggers (Dem.), West Virginia, chairman of the House Commerce Committee and its investigation subcommittee, headed a year-long inquiry into drug use by athletes. He concluded, "The subcommittee intends to follow closely the efforts which will now be made by sports organizations (to combat drug abuse and if any action on the part of Congress appears necessary, (be) assured that it will be initiated without delay."

Thus, both the sports establishment and players organizations, which fancy neither enforced testing by teams or leagues nor federal intrusion, may be forced to make a choice. In this case, it would probably be a self-administered testing program.

Bill Bidwill, managing general partner of the football Cardinals, said that spot checks or blanket tests conducted under team or league auspices "certainly is a possibility, or one of the possibilities."

Bidwill wondered, though, about the constitutionality of such tests and about the reaction of the players' organization. So did Sid Salomon III, vice president of the hockey Blues.

"We don't have a drug problem in hockey," said Salomon, "but if a spot check by the league's security force were recommended, I would be in favor of it.

Bing Devine, general manager of the baseball Cardinals, said, "Baseball has been alerted. We've made efforts to be on guard. I see no need to do anything beyond what we've already done."

Joe Torre, the Redbirds' player representative, was adamant in opposition to spot checks or any other kind of tests.

"It would irritate me to quite a degree to come in after hitting a home run or winning a tough game and be asked to take a urinalysis," Torre said. "It reminds me of that gun control bill. If somebody wants something, he'll get it.

"He (a drug abusee) wouldn't last very long in baseball, which is night-after-night, not once a week like other sports."

Dan Dierdorf, Big Red lineman and player rep, had much the same thing to say.

"In a nutshell, we've got to protect the image of football," he said. "The game must be beyond reproach. I don't know what the answer is, but tests would be an invasion of privacy."

Barclay Plager, captain of the Blues, thought otherwise about testing.

"How else could they really do it?" he asked. "If they had a few checks and found nothing, they wouldn't check too often. Nobody in hockey would be scared (of tests) unless he had an illness (like DeMont)."

Salomon's reference to the National Hockey League's "security force" meant the office headed by former Federal Bureau of Investigation man Frank Torpey, whose minions are known as "Torpey's raiders." Torpey is charged with investigating anything "detrimental to the game," a blanket responsibility that would include drugs.

Football (the NFL) has two investigators whose original prime responsibility was to look into the possibiliy of gambling, but who would also be expected to take care of drugs. They are Jack Danahy, formerly of the FBI, and Bernie Jackson, formerly of the Justice Department.

Baseball has Henry Fitzgibbon, a former St. Louis policeman, who has the same "detrimental-to-the-game" responsibility.

When Devine said baseball's safeguards were already adequate, he meant the educational program and individual efforts each team makes to protect itself from drug users.

Although Devine denied the suggestion made by one insider that the Redbirds had rejected deals that would appear to have been advantageous, except for the suspicion that the principals were drug users, he remembered examples of Cardinal housekeeping at the minor league level.

"I may have my head in the sand, but I know of no problem previously or now with our ball club," Devine said.

"There have been instances—I would say no more than six and maybe fewer than four—in which we have given minor league players their releases in the last couple of years, or since this drug situation became so widely discussed.

"In one case, it was hard drug with the needle. The others involved marijuana and we didn't just release the players. We consulted the local doctor and discussed it with the player himself first.

"We were thinking mainly of not letting it spread. We think we owe it to the parents of our (other) young players not to put them into situations where they would be exposed to marijuana."

The NFL reacted defensively to the case of Houston Ridge, the San Diego Chargers lineman who recently received a $260,000 out-of-court settlement of a $1,500,000 lawsuit involving drugs made available by the management. So the football league will have this drug guide posted in its training rooms next autumn:

"It is league policy that the use by NFL players of any drugs which have not been specifically prescribed, recommended or approved by your team doctor or personal physician is not in your interests, the interest of your team or the interest of the NFL.

"The use or distribution of 'pep pills,' or 'diet pills' by members of this team is not condoned by the league or by the management of this club. The taking of these drugs, regardless of amount, has never been shown to improve performance on the athletic field. Furthermore, their use should be viewed as a matter with medical consequence.

". . . Significant side effects can occur to the heart, pulse and blood pressure, as well as in connection with withdrawal or 'coming down' from the drug, especially with repeated or prolonged usage. Added medical risks can be encountered if one is injured and requires anaesthesia for surgery.

"Should there be questions about this policy or about the use of drugs of any character, either on or off the playing field, the team doctor will be happy to discuss them in private with individual players."

The football Cardinals are going a step beyond. New coach Don Coryell has included a page in his playbook promising serious penalties for drug users.

Trainer John Omohundro has been preparing a lengthy treatise on drug use, copies of which will be supplied the players.

The 26 NFL owners are to meet in New York next week, and will receive commissioner Pete Rozelle's new proposals on drugs.

Rozelle said that under the old NFL drug program, "We set up a program in which each club got the best possible local doctor and put all use of drugs under his jurisdiction. Our drug program put the doctor on the hook and made him responsible."

It was believed that Rozelle would ask for tighter control by the league office, which would include the filing of comprehensive reports by each team on what drugs were being prescribed and the reasons for their use. Another possibility is that the NFL might establish a medical director to keep a watch on the drug situation.

In a story June 12, the New York Times charged that four star NFL players were under surveillance for traffic in illegal drugs. But the Times did not name the players and the NFL said it had no knowledge of the charges.

The NFL has been under pressure to take action because of comments from the House subcommittee headed by Rep. Staggers. This group recommended that NFL teams submit to the league office copies of bills for all prescribed drugs.

The NFL Players' Association has gone on record as vigorously opposing the idea of urinalysis. Ed Garvey, executive director of the association, insisted that the league's drug problem was "greatly exaggerated" and said that a massive drug control program that would affect all players "would be like going after a mosquito with a shotgun."

If a player is detected as having used drugs, what happens then? What is the penalty? Should the team be penalized with forfeiture of the game?

St. Louis athletes did not accept the latter point—loss of the game.

"That's not fair to the 39 other guys," said the Big Red's Dierdorf. "What if you have one lame duck in the Super Bowl? You didn't take away Mark Spitz's medals (at the Olympics) just because DeMont didn't pass."

"It should be up to each individual," said baseball's Torre.

"Don't penalize the whole outfit," said football's Bakken. "There must be consequences for drug use. No hand slaps. It should be something like the penalty for gambling, which is darn severe. The absence of Paul Hornung (who was suspended for the 1963 NFL season) penalized the Green Bay Packers enough."

APPENDIX 5

[From the Washington Post, Sunday, May 27, 1973]

Use of Drugs by Chargers Under Probe

(By Mark Asher, Washington Post staff writer)

San Diego.—California medical authorities and the San Diego County district attorney's office are investigating allegations of promiscuous and indiscriminate use of drugs by the San Diego Chargers professional football team.

The state's boards of medical examiners and pharmacy are investigating whether the California medical practices act was violated in the late 1960s when as many as half the Chargers' 40-man squad may have obtained amphetamines (pep pills) and sleeping pills by merely requesting them from the team trainer, a system approved by the team doctor.

The disclosures leading to these investigations came in sworn depositions in a civil damage suit brought by former Charger defensive lineman Houston Ridge, who claimed he was under the influence of drugs when he suffered a hip injury in a game on Oct. 11, 1969, that left him permanently disabled.

The depositions were principally concerned with the period from 1966 to 1969, when Ridge played with the Chargers, William Kennedy, assistant district attorney from San Diego County, said the statute of limitations—three years—had run out for criminal prosecutions in this period.

But Kennedy said his office was now going through later pharmaceutical records to see "whether there were valid prescriptions and, if not, did certain individuals violate laws in distributing dangerous drugs and narcotics."

Upon conviction, such violations carry five-years-to-life sentences under the provisions of the California Business and Profession Code and the California Health and Safety Code.

The depositions and other sworn statements in the Ridge case revealed that drugs—amphetamines and sleeping pills as well as tranquilizers, muscle relaxants, anabolic steroids and pain pills—were ordered in lots of as many as 10,000 pillls per season, and that some players thought similar use of drugs was widespread throughout the National Footfall League.

The depositions showed the drugs were ordered in bulk through an arrangement between the team doctor, the team trainer and a San Diego pharmacist. Names of five persons in the Chargers' front office, including head coach and general manager Sid Gillman, were used on the group prescriptions.

According to court records, each Charger player could get two 15-milligram tablets of Desbutal just before a game plus anothher 15-mg. tablet at halftime. Desbutal, an amphetamine, increases alertness and blood pressure, although it has no effect on athletic performance as such.

The Physicians' Desk Reference says the normal adult dosage of Desbutal is 15 mg. daily for use in weight-reduction programs and that "treatment should not exceed a few weeks in duration."

Dr. E. Paul Woodward, the Chargers' team physician, said in his deposition that when he became team doctor in 1966, he did not attempt to end drug usage but merely to control it.

Gilman testified that he had handed out Dianabol, an anabolic steroid used for gaining weight, in the 1963 training camp. The Chargers won the American Football League championship that season.

But Gillman denied any later use of Dianabol, a drug the Physicians' Desk Reference says can cause impotence and shrinkage of the testicles. Gillman also denied knowing what an amphetamine was. That sworn statement was contradicted in a deposition given by former Charger defensive tackle Ron Mix, now that team's executive counsel.

Jim Heffernan, a spokesman for NFL commissioner Pete Rozelle, said the league would "have no comment right now" on the California investigations.

Heffernan said the league had not initiated any investigations of individual drug abuse but that the league office "followed" several criminal cases involving current or former pro football players. He would not elaborate.

After Ridge filed his suit in April, 1970, the National Football League posted signs in team locker rooms that any drugs not "specifically prescribed, recommended, or approved by your team doctor or personal physician is not in your interest, the interest of your team, or the interest of the National Football League." The NFL also banned the dispensing of prescription drugs by trainers, according to the depositions.

Mix, who testified that drug use was "extensive" among the Chargers from 1966–69, was traded to the Oakland Raiders in 1970. From his observation there, he concluded that the use of stimulant drugs "has dropped off a great deal."

He also said that as far as he knew amphetamines could not be obtained from the Oakland trainer. He credited the decrease to the NFL's educational program in drugs, including the locker-room policy statement, which first appeared in the 1971 training camps—at least 14 months after the litigation was started by Ridge.

In the first case to be litigated this heavily on the use of drugs in sports, Ridge sued Dr. Woodward, the Charger's team physician; Gillman; trainer Jimmy Van Deusen; and the National and American football leagues among others, for $1.25 million.

Ridge claimed malpractice, battery by drugs and conspiracy. Last month's settlement was for $260,000, according to published reports. Ridge also received a $35,000 settlement in workmen's compensation benefits, according to his lawyer, Robert Baxley of San Diego.

Woodward still is the team physician. Gillman now is general manager of the Houston Oilers. Van Deusen, who left the Chargers in 1971, is now working for a sporting goods firm, according to a Chargers' spokesman.

Harland Svare, the current coach of the Chargers, and Ric McDonald, who replaced Van Deusen as trainer, have both said publicly that the Chargers have not used amphetamines since the two were hired.

Ridge's suit arose out of a broken left hip he sustained in an Oct 11, 1969, game against the Miami Dolphins. Ridge testified he had taken nine pills—including three Desbutal and three muscle relaxants—either before the game or at halftime.

Ridge, who has undergone two operations on the hip, is permanently disabled and must use a crutch. Ridge said he has been advised he may need additional surgery, including the insertion of an artificial hip joint.

Ridge suffered the injury in the second half of the Oct. 11 game and claimed the drugs dulled his awareness of pain. Ridge was able to walk following the game but when he awoke the next morning was unable to put any weight on the leg, he testified.

Court records showed that Woodward, an orthopedic surgeon, did not X-ray the leg until Oct. 20, after the team returned to San Diego following an Oct. 19 game at Boston.

In a report that was accepted by defense attorneys and became part of the court record, an anonymous medical reviewer concluded that the Chargers were responsible for two actions:

"The promiscuous and indiscriminate use of dangerous drugs' by professional football players.

"Frank abuse in the dispensing of dangerous drugs" by Van Deusen.

The medical reviewer labeled the Chargers' training room "Drugsville USA" and concluded that the trainer "was practicing medicine without a license."

Various depositions indicated that Van Deusen administered injections (an illegal practice for a registered physical therapist, which Van Deusen is); that he kept personal medical records about which Dr. Woodward knew nothing; and that he sometimes exceeded Dr. Woodward's orders by giving additional therapy and treatment.

"He is a registered physical therapist, although he should also probably be a registered nurse and a general practitioner, if not an orthopedic surgeon," the medical reviewer observed.

Some prescriptions received by the pharmacist, according to the medical reviewer, were typed and did not bear Dr. Woodward's signature or registry number. Dr. Woodward testified that he could not remember ordering some drugs for which there were prescriptions.

Van Deusen denied he ever signed Dr. Woodward's name to any document that was sent to any pharmacy for prescription medicine.

Dr. Woodward justified what one FDA official termed "a crummy medical practice" as "The most reasonable way of handling this situation."

The team physician outlined what he called "a complicated problem," saying that he had reached his decision to try to control rather than to eliminate drug use after conferring with Van Deusen about the Chargers' use of drugs prior to 1966.

". . . I was apprised of a problem with amphetamine drugs, and was told that in the past, because of the ready availability of amphetamines, the open market, et cetera, that problems had arisen with ballplayers taking amphetamines without any control or knowledge as to quantity or what particular drug," Dr. Woodward said in his deposition.

"The policy had been established that a known amphetmine would be available only for those who requested this medication, that its use would be discouraged wherever possible, but that those who requested it would be allowed to take a given quantity, in an effort to try and have some type of control over the usage of amphetamines . . . so Mr. Van Deusen was instructed that he might give Desbutal to those players who specifically requested this."

Van Deusen testified he could remember only one day as Charger trainer between 1966–69 when nobody got a pill.

"Well," he said in his deposition, "I don't remember the particular date, but I was out of town on a given day, so—I was scouting a ball game out of town one time, so I know that I—"

"If you were not there, nobody got a pill?" Ridge's attorney interrupted.

"That's right," Van Deusen replied.

Dr. Woodward said the amphetamines problem had been discussed by the society of professional football team physicians, in relatoin to diagnosing head injuries. One physician told of having hospitalized a player, believing he had a serious head injury; it turned out that the player had, unknown to anyone, taken a large dose of amphetamines.

According to the Physicians' Desk Reference, adverse reactions from Desbutal, at recommended dosages, can include elevation of blood pressure, overstimulation of the central nervous system, restlessness, dizziness, tremor, headache, impotence, change in libido, dryness of the mouth and, rarley, psychotic episodes.

A number of teams had gone on record that they didn't use amphetamines, but Dr. Woodward testified those teams were frequently using the stimulants.

Nevertheless, the society of team physicians had never recommended the "absolute cessation" of the use of amphetamines for professional football players, Woodward testified.

The use of stimulant drugs in sports "is something we're strongly opposed to," said Dr. Barrett Scoville, acting chief of the Food and Drug Administration's division of neuropharmacological drug products, in an interview.

"We do not approve of or condone artificial stimulation or sedation for purposes like athletic performance," said Dr. Thomas Elmendorf of Davis, Calif., president of the California Medical Association.

Dr. Woodward disagreed with these doctors in his deposition.

"Many of these professional ball players have taken amphetamines in college days, and if you did not have some type of control this way, we felt that they would obtain their own supplies, since they are available, and we would not know how to control it.

"We also felt that if we provided . . . one of the safer ones, and had some way of controlling the dosage, they would be less likely to go out on their own and get their own supply, and we would at least feel that they would tell us about taking the medication, rather than trying to conceal this.

". . . This would in turn give us better control over this particular problem . . . It was somewhat common knowledge that this drug (amphetamine) was being used with—throughout professional sports."

But in sworn answers to interrogatories, the NFL and AFL said no one had ever investigated the matter of drug use by any NFL or AFL player.

Lawyers for the NFL also contended that as long as the drugs were prescribed by doctors the NFL constitution did not give the NFL "the power or duty to control such drug usage on the club level."

Other testimony from the depositions revealed that Alvin Roy, the Chargers' strength coach, sent Ridge and two other players to Dr. Charles Franklin for shots of Deca-Durabolin, an anabolic steroid, in 1966.

Dr. Franklin, who died about a year ago, was an obstetrician/gynecologist and a close friend of Gillman.

Both Gillman and Dr. Franklin denied they had discussed the use of Dianabol. Dr. Franklin testified he had talked about it with Roy, who Dr. Franklin said had told him that Russian Olympic weightlifters were using it.

Dr. Franklin testified that he also issued prescriptions for 30 Dianabol tablets to Ridge and the two other players Roy sent to him. He did not charge for injecting the Deca-Durabolin, but only for the cost of the medicine, he said.

Asked why he did not charge for his services, Dr. Franklin replied, "Well, the Chargers had given me so much fun in the time they had been in town, I felt I owed them that, any little service I could give them."

He also testified he treated many Chargers' wives "with reduced and frequently no fees" and the reason "is that I feel we do owe the Chargers something in the community and this is the way I handle it."

The Physicians' Desk Reference carries the following warning on Dianabol—"anabolic steroids do not enchance athletic ability."

Dr. Franklin also admitted he did give Ridge a physical examination before injecting him with an anabolic steroid. He said he had taken the word of Roy, the strength coach, and noted that "Ridge had been given a physical by the Charger doctor on entrance to camp."

According to a deposition given by Mix, who was the Chargers' player representative in 1963, Gillman had personally handed out Dianabol in the Chargers' 1963 training camp.

Gillman admitted handing out the Dianabol at that time and testified: "According to Dr. Franklin, it was a high-protein pill used to encourage the maintenance of weight and used to gain weight by any human being."

Gillman also testified that the Dianabol pills prescribed by Dr. Franklin "were put on the training table, as was a salt pill, as were vitamin pills. This was the recommendation of Dr. Charles Franklin and this was the way it was handled."

Gillman said he handed out the pills because he wanted to get the team's weight-gaining program started. He testified he did not know if the Chargers ever stopped using Dianabol.

Gillman's denials that the team was using amphetamines, and that some players had pointed out to him the dangers of using Dianabol, were contradicted by the Mix deposition.

What the California boards of medical examiners and pharmacy will be investigating primarily is whether Dr. Woodward violated the medical practices act by prescribing drugs in bulk and not prescribing them in the names of the individual players who used them.

The Division of Investigation of the California Board of Consumer Affairs is handling the investigation. Its findings will be presented to the state attorney general's office, which will determine whether there is grounds for a hearing to consider revocation of licenses.

Ray Reid, executive secretary of the board of medical examiners, said in an interview that there is no statute of limitations in licensing board actions. He said any action under the medical practices act probably would be withheld, pending criminal prosecution.

Dr. Paul Dugan of Roseville, president of the board of medical examiners, said the penalty could run from "scolding the person to revoking the license outright and anywhere in between."

In an interview, Dr. Dugan said the goal of his board was "rehabilitation." He added that the board of medical examiners still could discipline any doctor, even if the courts did not.

"The courts determine did they break the civil law," Dr. Dugan said. "We look at it as 'Will they harm the public?' "

Dr. Elmendorf, the state medical association president, said mass prescriptions are "awful medicine . . . People respond differently to drugs. Each person will react in a different way to a different drug. This makes it obvious why a doctor could not do this in good conscience."

Dr. Woodward and Van Deusen both testified that a system existed by which Woodward prescribed drugs for the Chargers as a group and by which Van Deusen dispensed them under "a standing verbal order" from the doctor, without written orders or individual prescriptions.

Amphetamines, muscle relaxants and sleeping pills were among the prescription drugs dispensed under this system.

Van Deusen testified that Ambar, another amphetamine, was available but could not be given without specific orders from Dr. Woodward. But the team physician said he could not recall ever prescribing any amphetamine other than Desbutal.

Van Deusen testified he had "little knowledge" of pharmacology and that he did not know what the "synergystic effect" is (how one drug will react when it is taken with another).

At one point, Dr. Woodward could not say which of three muscle relaxants he ordered given to Ridge. The doctor testified the three muscle relaxants used by the club had similar effects and that he left it up to Van Deusen to use whichever was available.

He testified Van Deusen carried prescription drugs as "a matter of convenience."

Woodward also testified that he kept no record of Charger prescriptions; that Van Deusen had a key to the training room medical cabinet but that he did not; and that no record was kept to indicate who got which pills.

"A system where a doctor would turn over his prescribing power to a football trainer is terribly illegal and morally depressing," said Dr. Donald Holsten, executive director of the California State Board of Pharmacy.

According to another letter in the court record, the pharmacy board was consulted by David M. Harney of Los Angeles, one of Ridge's attorneys, concerning the practice of group prescriptions.

". . . Please be advised that prescriptions can only be written for an individual. Group prescriptions are not legal," said the letter, signed by Fred A. Willyerd, assistant executive secretary.

The pharmacist who filled most of the Chargers' prescriptions at issue in the Ridge case was Edward Whalen, whose pharmacy is in the same building as Dr. Woodward's office.

Whalen testified that when Dr. Woodward became team physician in 1966 they agreed that the pharmacist would furnish all prescription drugs and arrange to have them delivered to the doctor personally or to the Chargers' office.

Whalen added that the disposition of the drugs was "to be under his (Woodward's) personal direction." Whalen testified Woodward would not dispense all the prescription drugs personally, but rather "oversee, he would take care of control of the medications."

Whalen said Dr. Woodward had supplied the names of those to whom the prescriptions could be made out. They included Gilman, Van Deusen, assistant coach Tom Miller, former business-manager John Gaugh and current business manager Irv Kaze.

"Do you know why the prescriptions just weren't made out to the Chargers?" Ridge's attorney, Robert Baxley of San Diego, asked Whalen?

"Yes," Whalen replied.

"Why?"

"It is illegal."

Van Deusen testified he had supplied the five names to Woodward. But he added that, of the five, only he picked up the drugs and that this was the intended plan all along.

One prescription made out to Gaugh was for 500 15-mg. tablets of Desbutal. It was refilled four times—for an additional 2,000 tablets—in one year.

"Do you know why John Gaugh, or whatever his name is, for example, the prescription is made out to him?" Baxley asked Whalen.

"I didn't question Dr. Woodward on this point," Whalen replied.

"Did you feel there was anything unusual about filling a prescription for 2,500 Desbutals in one year to Mr. Gaugh?" Baxley asked.

"Object to the form of the question as being ambiguous and vague and irrelevant. Don't answer it," San Diego lawyer John Rhoades advised his client. Whalen didn't.

Whalen said he asked Dr. Woodward each time at the time of a refill and "told him of the quantity and he said it was okay to refill."

Approximately half those 2,500 Desbutal are unaccounted for, since by the doctor's limit of three per game, only about 1,200 would be needed for a complete season. That figure covers half the roster (20 players) taking three each for 20 regular-season and exhibition games.

What could have happened to the other 1,300 is suggested in Ridge's deposition.

Ridge said assistant trainer Jim Hammond told him both Van Deusen and Hammond took pep pills. (Van Deusen denies this). Ridge also testified he had seen Van Deusen give pills to at least two other players, Bob Wells and Ken Graham, at the end of seasons other than 1966.

Ridge testified teammate Russ Washington had a bottle of Desbutal in his room in either the 1967 or 1968 training camp. Ridge testified that Washington told him he had gotten the bottle of pills from Van Deusen, Washington once gave Ridge one of his Desbutal, but refused to give his teammate one on another occasion, Ridge testified.

Wells told Ridge the pills the trainer had given him were "water pills," to help him lose weight, Ridge testified. He also said he saw Van Deusen give Graham pep pills, "green—blue-green on one side, and yellow on the other."

The tablet Ridge identified is the common commercial form of Desbutal, 15 mg.

Mix said that although he did not actually see the trainer or and other Charger personnel dispense amphetamines, he knew the source was the trainer.

"How do you know that?" Mix was asked.

"Well," replied Mix, "there are some things that are just common knowledge when one is playing football, and—I recall one particlular incident when a rookie ballplayer had, I guess you could say, carried logic to the extreme and felt that if one bennie would be good for him, maybe 10 would be better.

"I don't know the exact numbers, but the result was that he was in some kind of discomfort after the game."

Beyond saying that the rookie was not Ridge, Mix refused to disclose the name of the player at the time.

". . . I don't know what kind of sanctions would fall upon particular athletes by the league if they were named," Mix said. "Further, I don't know what effects public knowledge of who took pills would have on them securing employment in other places, if they had that kind of reputation . . ."

Mix's example of the rookie pointed out how uniformed some of the Chargers were about the drugs they were using. It was a major point in Ridge's complaint:

"The administration of these drugs to the plaintiff involved a systematic risk of harm to the palintiff which was known to the defendants and which the defendants negligently failed to communicate to or warn the plaintiff of the risk inherent in the use and administration of those drugs."

At one point in his examination of Ridge, a defense lawyer asked, "Did any player discuss with you that it was just a calculated risk of playing football, that you took these pills and you might get hurt? Did you ever discuss that before you were injured?"

"No," Ridge replied.

Ridge also testified that a Dr. Jones first told him that pep pills were dangerous in 1970, or a year after he had been injured. Ridge said he took two muscle relaxants and two "bennies" before each game in 1967, 1968 and 1969. He said he could not remember if he took those drugs in the 1966 season.

In written answers to written interrogatories posed by NFL lawyers, Ridge gave the following answers as to what effect the pills had on him and whether he was forced to take the pills:

". . . I was very excited, tense, insensitive to pain, elated, my mouth was dry and I was not thinking clearly.

"I took the pills that were given to me, and although no one exercised physical violence to force me to take such pills, I felt that I was required to take such pills and under the economic and psychological aspects appertaining."

During the taking of Ridge's deposition, a defense lawyer tride to limit the scope of how many Chargers were using drugs.

"You knew there were a great number of players that never took any pep pills, did you not?" a defense lawyer asked.

"A great number?" Ridge replied.

"Yes," replied the lawyer.

"No, I didn't know a great number that didn't take them," Ridge replied.

Ridge testified that Paul Lowe, a Charger who was traded to the Kansas City Chiefs, told him the Chiefs used a different kind of pep pill. But Ridge said Lowe did not say how many Kansas City players were using them.

Harry Johnston, who was a Charger assistant coach for the 1966–67 seasons, testified that if he were a head coach, he would overrule a physician who would allow the use of amphetamines.

Gillman testified that he would not have.

"I want you to assume, Mr. Gillman," as Baxley posed the question, "that amphetamines were being purchased and dispensed during the period of 1960 to 1966. If the doctor prescribed these pills, would you have objected to it."

"No," Gillman replied.

Johnston said why he would have objected:

". . . If I'm the head coach, I'm responsible. No kid is going to do it. Period . . . Even if a doctor prescribes it."

Gillmen said there were no budgetary problems in buying drugs when he was with the Chargers.

"Did you see to it that the budget was met?" Gillman was asked.

"A football budget is not—is merely a starting point, it doesn't—isn't run like any other business," Gillman replied. "We just say it is our starting point, if we need more of this or less of that, we just go."

Johnston testified that two of his linebackers apeared to be using amphetamines, that their play was adversely affected, and that he was able to get them off the drug before the next game by personally talking to them.

"What is your general knowledge of the use of drugs in professional football in 1966 and 1967 by players as far as using them as a stimulant?" Baxley asked Johnston.

"My opinion?"

"Your general knowledge."

General knowledge? Specific knowledge is very little. General knowledge is—it's part of the game."

(Contributing to this story was Washington Post special correspondent Robert Meyers).

CHARGERS' TESTIMONY DISPUTES GILLMAN ON PLAYERS' DRUG USE

SAN DIEGO.—Testimony in sworn depositions by other witnesses in the Houston Ridge case contradicted some answers of Sid Gillman, then coach and general manager of the San Diego Chargers, about his knowledge of the use of amphetamines by his players.

Gillman, top administrator in the Chargers organization, maintained that "The doctor ran the whole show" in the dealing of drugs to players.

Under penalty of perjury, Gillman said he did not know what an amphetamine was, that nobody ever connected with the Chargers told him about drug use by the players, and that the players did not question his handing out of Dianabol, an anabolic steroid, when their personal doctors said it was a bad practice.

Following are excerpts from the sworn depositions of Gillman, former player Ron Mix and former coach Harry Johnston:

Q. Ever heard of a drug called an amphetamine?

GILLMAN. No.

Q. But you heard a rumor that he (an unidentified Charger rookie) had taken quite a few (amphetamines)?

MIX. Well, it wasn't rumored, it—shortly thereafter Sid Gillman made an announcement to the team that some players were taking more than usual, and might be possibly taking an unsafe amount, and in the future that the—I believe he said in the future the trainer would give a maximum of two to any player who desired them.

Q. Now up until Oct. 11, 1969, had anybody connected with the team ever told you about any drug use by any of the players?

GILLMAN. No.

Q. That matter was never discussed on a policy basis?

GILLMAN. Never discussed on a policy basis.

Q. Has the matter ever been discussed when you were present?

GILLMAN. Now you're talking about what date?

Q. Up until Oct. 11, 1969.

GILLMAN. No.

Mr. SULLIVAN (a defense attorney). Commencing in 1966?

GILLMAN. No.

* * * * * * *

Q. Did you (Johnston) on this one occasion where you were under the impression that one of your linebackers was under the influence of speed, or amphetamine, or something——

JOHNSTON. Yes, sir.

Q. Were you concerned about that?

JOHNSTON. Yes.

Q. And did you attempt to discuss this matter with Mr. Gillman?

JOHNSTON. Yes.

Q. And would you tell us how that occurred and what happened?

JOHNSTON. We—I had a linebacker who blew every coverage. I tried to talk to him at the half, and to me he was incoherent, and I had the impression that he had taken something, or been affected some way. I talked to Mr. Gillman after the ball game and got no response.

Q. Did he just not—did you tell him what you had observed?

JOHNSTON. Yes.

Q. And what did he do in response to this?

JOHNSTON. Absolutely nothing.

Q. Did he just ignore what you said?

JOHNSTON. Yes.

Q. Did Mr. Gillman ever make the statement to you that the most important thing he wanted to do was win the ball game?

JOHNSTON. Oh, I'm sure he did. I'm sure that, I can't remember specifically, but I'm sure that's a common statement by any coach.

* * * * * * *

Q. Do you recall any incident where the—any members of the Players Association were concerned about having to take Dianabol because of the potential harmful effects?

GILLMAN. No.

Q. Did you have any discussions with Ron Mix on the subject?

GILLMAN. No.

Q. Did any employee of the Chargers or any player ever approach you concerning Dianabol?

GILLMAN. No.

* * * * * * *

Q. Before it (Dianabol) was made available to the players at the training camp that summer (1963), was there a team meeting at which its use was discussed?

MIX. No, the closest that there came to being a team meeting was we had been taking the pill—first of all, it was presented to us as a pill which would help us assimilate protein, and with this assimilation of protein, we would become stronger, combined with the training that was taking place.

Now I don't know—I don't know what period of time passed, but it was still during the training camp when one of the players, Dave Kocourek, mentioned to me, and a couple of other players . . . that he had mentioned to his personal physician that he was taking Dianabol, and his personal physician said that this was a potentially dangerous drug, and probably should not be used by those who are healthy; it's generally given to those who suffered some form of grievous injury . . . even those should not take it for any extended period.

And Dave brought along a brochure that apparently accompanied the medicine, his doctor gave to him, and he said this period of time that will be the maximum amount of time one should take it would be approximately six weeks, and it listed the dangerous side effects that could take place. As I recall they were shrinkage of the testicles; some form of liver damage . . .

Well, at any rate, after Dave had alerted us to this, I don't know who was with me at the time, I think it was Dave, I just don't recall, but we brought it to the attention of Mr. Gillman, and—however, the practice continued.

APPENDIX 6

[From Pro Football Weekly, July 1973]

HOUSTON RIDGE CASE A REAL SORRY AFFAIR

(By Jerry Magee)

The National Football League also has its Watergate. In the files at 410 Park Ave., New York City, N.Y., it likely is in a vanilla folder labeled "the Ridge case."

The reference is to Houston Ridge and probably you have not heard of him. Well, Ehrlichman and Dean and McCord and Vesco were not exactly household words, either, until those Cubans ran that end-around play on that office building in Washington, D.C.

Watergate is a scandal, ugly, unsavory and that sort of thing and so in a way which does not affect the nation's highest office is l'affaire Ridge. But before examining the case's particulars, let me tell you something about him.

Once, when he did not as he does now require the assistance of a cane to get around, Ridge was a physical phenomenon. At San Diego State, at which he matriculated out of Reedley College in Northern California, he threw the discus with either hand and also got pretty good distance with rival offensive linemen.

Lifting weights, he once said, was something he did for fun and he could lift the building. After he came to the San Diego Chargers in 1966, he tore an isometric device loose from its cement moorings. At 6-4 and 270, he seemed the most indestructible of men.

Then in 1969 in a game in Miami he came to the sidelines complaining he had injured a hip. His usefulness as a player ended that night in the Orange Bowl.

Ridge underwent surgery in time. On April 17, 1970, he filed suit in Superior Court in San Diego for $1.25 million, naming the Charger team physician, the trainer, then coach Sid Gillman, the team's owners and the American and National Football Leagues.

In his action Ridge alleged he had been made vulnerable to injury by drugs administered to him by the team physician. He said this involved a systematic risk of harm to him which the defendents knew and that they had failed to tell him of the inherent risk involved.

It was believed a landmark suit. Only the extremely naive believe athletes live outside the drug culture and the Ridge suit, should he win it, would document in court what Dave Meggyesy, Skip Oliver, Jim Bouton and other famous men of literature had pointed to.

For three years, Ridge's action remained in the courts. Recently, it was settled, Ridge receiving $200,000, plus medical expenses, a total of $325,000.

The settlement was handled quietly. The monies to go to Ridge were announced, nothing more. But depositions given in the case, and there were page after page of them, were obtained by Jack Murphy, the writing star of the San Diego Union, and in a copyright story and others which followed Murphy has detailed the content of the depositions.

In sum, they suggest the San Diego athletes of the late 60s were devouring amphetamines (known on the street as "speed") like jelly beans. There is testimony the Chargers one year placed an order for 10,000 of these pills.

"Maybe," Harland Svare has said, "they got a deal." Svare, of course, was not employed by the San Diego team at the time to which the depositions refer.

Out of the Ridge matter is apt to come legislation aimed at making it more difficult for NFL performers to be pepped up pharmaceutically. Urine tests similar to the ones given race horses would be one method to accomplish this.

It's like they say around the tracks: "If you can't run on hay and oats, you shouldn't be running."

Or scoring touchdowns.

APPENDIX 7

[From Socio-Cultural, June 1973]

Doping: A Stash Literature Review

(Prepared by the staff of the Student Association for the Study of Hallucinogens)

INTRODUCTION

Until recently most people thought that sports activities were isolated from contemporary social problems. Unfortunately, this belief has been discredited by recent events at both national and international sports competitions. One problem in particular has been the increasing and pervasive use of drugs by athletes. Two scholars from the Institute for the Study of Sport and Society writing about the use of drugs in sports noted that the traditional ethic "It is not important if you win or lose; what matters is how you play the game" has been replaced by an attitude similar to Vince Lombardi's philosophy, "Winning isn't everything; it's the only thing." These authors go on to suggest that as long as this latter attitude remains dominant in sports activities, athletes will do anything, including using and abusing drugs, to help them be winners.

However, the search for and the use of ergogenic aids (i.e., agents which increase physical performance) do not originate in our contemporary drug oriented culture. Boje claims that performance increasing substances were first used by legendary "Berserkers" who, according to Nordic mythology, increased their fighting strength twelvefold by eating *Amaniat muscaria*, a type of psychoactive mushroom. Similarly, the Romans tried to increase the speed and staying power of horses during cart races by giving them hydromel, a mixture of honey and water. In his brief history of ergogenic aids, Dr. Prokop describes how the participants in the famous 1879 "Six Day Races" prepared for the contest: the French racers used a mixture made from a caffeine base, while the Belgians allegedly ate sugar cubes dipped in ether, others drank alcohol cordials, and the sprinters used nitroglycerine.

"Doping" first appeared in an English language dictionary in 1889, meaning the use of a mixture of opium and other narcotics on horses. Originally, the root "Dop" was part of the Kafir Dialect, which is spoken in southeast Africa. "Dop" was a strong liquor used as a stimulant during religious ceremonies. Since the late 19th and early 20th century, the definition of doping has expanded considerably.

DEFINITIONS

Exactly what constitutes doping is a matter of considerable debate. Clearly drug use, in and of itself, is not inherently synonymous with drug misuse in the sports world. For example, sports participants may receive drugs for specific ailments through legal medical channels. In this particular situation, the use of such drugs does not generate concern unless the prescription contains chemicals which have the side effect of artificially improving performance. Another type of drug misuse, which is beyond the scope of this paper, is the use of such illegal drugs as marijuana and hallucinogens. Again, this type of drug usage is not generally regulated by definitions of doping, unless the drug illegally obtained affects the user's physical performance.

Definitions of doping vary from sport to sport and country to country. Bil Gilbert, writing in *Sports Illustrated*, attempted to secure definitions of doping from different athletic associations. Some of these responses are recorded below:

"The intake of substances aiming to artificially increase during a competition the performance of the competitor with detriment to the morale of the competitor and his physical and psychic integrity must be considered doping." (Italian Federation of Sports Medicine).

"The use of any drug—effective or not—given with the intent to increase the performance in competition must be considered as doping." (The German League of Sports Physicians).

"[Doping is] the administration to, or use by, a healthy individual while taking part in a sport competition of (a) any chemical agent or substance not normally present in the body . . . and/or (b) any chemical or substance . . . [which] forms a normal part of the bio-chemical environment when introduced in abnormal quantities and/or by an abnormal route. [It is also] the administration to, or use by an individual temporarily disabled by disease or injury who takes part in a sporting competition of (c) any chemical agent or substance regardless of nature, dosage, preparation or route of administration . . . which by its secondary effects improves artificially the performance of the individual during competition" (The British Association of Sports and Medicine).

Some organizations avoid such lengthy definitions by simply prohibiting the use of certain agents by participants in sports activities. For example, the International Olympic Committee ruled that if you were caught using alcohol (in excess), amphetamines, ephedrine, cocaine, vasodilators, opiates, certain analgesics, or hashish you would be punished. In this way any discussion about whether these agents actually improve performance or whether they are being used for valid medical reasons is avoided. The drug list was a rule of the Olympic Games, just as there are rules governing practicing procedures.

Gilbert's efforts to uncover rules regarding the use of drugs in major sporting leagues were largely unsuccessful. After writing to a number of different sports officials he received these kinds of replies:

"The American League has no rules regarding pep pills, painkillers, etc. Baseball players don't use those type of things" (American League Executive Assistant Bob Holbrook).

"We have rules on gambling, etc. but none on medical matters. These are left to the club physicians and the club trainers in both leagues" (NFL–AFL Publicity Director Don Weiss).

"A player should not do anything which is detrimental to the best interest of the club, of the ABA or of pro sports. He must always remain in good condition" (American Basketball Association).

"All trainers are very much opposed to the use of drugs, but as an association no policies have been made or initiated or directed to anyone at all because this is a medical problem" (National Athletic Trainers Association).

While these comments suggest that there are few written rules governing the appropriate use of drugs by athletes, it should be mentioned that several athletic unions such as the International Amateur Athletic Federation, the Amateur Athletic Union and the United States Olympic Association have ruled that the use of any drug to improve athletic performance is grounds for disqualification because it is contrary to the highest ideal of sportsmanship.

Part of the difficulty faced by those trying to define legitimate and illegitimate use of drugs is that oftentimes there is a hazy line between justified therapeutic administration of agents and irresponsible prescription of drugs for the sole purpose of improving performance. For example, during the 1972 Olympics a gold medal swimmer was disqualified because traces of ephedrine were found in his urine. Although the drug had been prescribed for the treatment of asthma, the Olympic officials apparently felt that this constituted doping in that the drug had a slight stimulating effect on the central nervous system.

AGENTS THAT ARE COMMONLY USED AS ERGOGENIC AIDS

Dr. Ariens, at the Department of Pharmacology at the University of Nijmegen, the Netherlands, developed a classification system for the different allegedly ergogenic agents. The first class consists of drugs related to metabolites such as vitamins and minerals as well as specific metabolic intermediates such as aspartic acid. As long as these agents are used in normal doses through the normal oral route, they are considered legitimate food supplements. If they are injected directly prior to the competition, this constitutes doping. Particularly popular in recent years have been vitamins E and C. A September issue of the *Journal of the American Medical Association* (1972) dealing almost exclusively with the 1972 Olympics quoted one Olympic weight lifter, "We take so many vitamins and food supplements, it's a hypochondriac's dream in technicolor." Diets rich in bases have been fed to athletes in training in the hopes that this will help retard the development of fatigue symptoms, which stem from changes in the pH of the blood to the acidic side during strenuous exercises. Another technique to achieve the same goal is augmenting the organism's oxygen supply. This method is most effective when an athlete inhales oxygen to shorten the time needed to recuperate between events.

Different types of hormones and hormonids are another class of agents frequently ingested by athletes. Androgens and male hormones build body mass and are consequently popular in sports such as football, wrestling and weightlifting. However, a broad range of often intolerable side effects make these drugs medically undesirable. These include possible development of masculine characteristics such as a beard and hoarse voice, possible reduced libido in adult males as well as potential arrested bone growth if the drugs are used on prepubertal boys. Anabolic steroids are often used instead because, although they are closely related compounds, they do not produce the masculinization which the male hormones do. Dr. Ariens notes, "It is to be feared that this type of doping which will be very difficult to detect will gain in importance in the next few years."

The AMA Committee on Medical Aspects of Sports issued an unpublished statement in September 1965 on the use of androgenic anabolic steroids in sports:

"In conclusion there is no excuse for giving these drugs (androgenic anabolic steroids) to healthy athletes of any age. The ill effects—decrease in ultimate height, virilization, precocious puberty, decreased testicular size and libido and changes in liver function—are insidious and not immediately apparent. The delay in appearance of these effects can easily lead to misdiagnosis and inappropriate treatment. If these considerations are not convincing, the legal (when sold without medical prescription) and the ethical (the use of prescription drugs for healthy persons in the quest for advantage in sport) implications cannot be disregarded."

Progesterone and estrogen type hormones are used by women athletes to alter the menstrual cycle. According to an article in a late August issue of the *Sunday Times (London)*, three-quarters of the United Kingdom's girl athletes used these drugs so that they would be in peak form at the 1972 Olympic games.

Other hormones such as corticoid hormones, ACTH, thyroxine, insulin and adrenaline have allegedly been used on athletes during pre-training period. The first two, cortocoid hormones, and ACTH, help athletes overcome exhaustion. In addition, they may reduce the symptoms of inflammation such as swelling and pain. However, because pain is a signal which should lead to a reduction in activity, any attempt to suppress this warning is potentially dangerous to the athlete. Thyroxine, the hormone of the thyroid gland, is used for weight loss. The more natural way of achieving the same goal in a healthy individual is dieting. Insulin enhances the uptake of glucose and potassium by the tissue, while adrenaline stimulates glucose metabolism in the cell. These drugs are used to regulate metabolism, although in healthy individuals they tend to disturb the metabolic harmony of the body.

A third class of drugs is those acting on the cardiovascular and respiratory system. Vasodilating drugs such as ronicol, nicotinic acid and nitrates bring about a dilation especially of the vessels in the skin, which is accompanied by a decrease in blood pressure. By doing this they increase the blood flow to the muscular system and accordingly increase the supply of oxygen which carries off the carbonic acid, thereby reducing fatigue symptoms. However, there is evidence that the use of drugs for this purpose will result in a highly uneconomic and dangerous overloading of the heart. During the Olympics of 1960, a cyclist collapsed after using a vasodilating drug probably because of overburdening of the heart. Cardio-stimulating drugs often have a general stimulating effect on the central nervous system and therefore also stimulate the circulatory and respiratory functions. Respiratory stimulants are used to assist in the intake of oxygen necessary for energy production and the elimination of the carbon dioxide formed by the metabolic process.

The fourth classification is psychopharmaca, which include the psychostimulants and psychosedatives. The exact effect of amphetamines on competitive performance is difficult to measure in a laboratory situation. In the first place, the intense competitive spirit which characterizes most sports events is difficult to replicate in a controlled situation. In addition, variables such as the expertise of subjects in their sports, the length of time between injection and performance, and the ways used to measure performance have caused different investigators to reach different conclusions about the effects of amphetamines in sports.

Concern about the impact of amphetamines on performance was generated during and after World War II when rumors circulated that the Germans were using stimulants on their troops. Seashore and Ivy (1953) undertook experiments which tried to replicate field situations with a series of war games involving such strenuous tasks as an eighteen-mile hike followed by guard duty for nine hours. At the completion of these exercises, the subjects were asked to take performance tests. At different intervals during the games, participants were administered orally either caffeine sodium benzoate (450 milligrams), amphetamine sulfate (10 mg), methamphetamine hydrochloride (5 mg), or a lactose placebo. Because of the extensive nature of the project, the findings cannot be summarized in this brief review. However, the drugs used were generally superior to the placebo in reducing sleepiness and enhancing motor coordination and physical endurance.

Smith and Beecher have conducted a large number of studes on athletes in an effort to measure the effect of stimulants on performance. An early study (1959) was done on college swimmers. Each participant was asked to swim his preferred event two times, fifteen minutes apart on twelve consecutive days. On four of the days, the swimmer was given a dose of amphetamine sulfate equal to 14 milligrams per 70 kilograms body weight (14mg/70kg); on four other days he received a dose of secobarbital (100mg/70kg); and on the remaining days he received a placebo. Two to three hours elapsed betwen the administration of the amphetamine and the swim, while only fifty-five minutes were allowed to pass between the ingestion of the secobarbital and the swim. All but one of the 15 subjects swam better with amphetamine than without the aid of any drug (i.e., with the placebo).

Although the mean difference between the two swim times was small (1.6%), small improvements for a competing athlete can mean the difference between world championship and oblivion. For example, the old 1965 World Record in the 220-yard free style was 2 minutes, 1.1 seconds. The new record cited by Weis (1969) was 1 minute, 59.7 seconds, which is only a 1.2% improvement over the old record.

Shortly thereafter, Karpovich (1959) did a series of experiments which seemingly negated the findings of Smith and Beecher. However, the different conclusions might be attributed to Karpovich's use of different time periods between ingestion and testing. He only allowed one hour for 10 mg of amphetamine and 30 minutes for 20 mg. Haldi and Wynn (1946) also failed to detect any effect of amphetamines on swimmer performance. However, they relied on untrained swimmers for their subjects. In a later study Smith, Weitzner and Beecher (1963) demonstrated that the use of swimmers who were not trained introduced considerably more variability in studies than use of trained athletes in the same type of experiments.

The stimulants do seem to have an improving effect on performance, although information about how much and under what condition has not been clearly outlined. Sedatives should be included in the discussion on psychopharmaca as they are often used to help over-anxious athletes relax. The use of muscle-relaxants might be considered restorative because they permit the nervous athlete to compete at a "normal" level.

The AMA ad hoc Committee on Amphetamines and Athletics has issued the following statement on the use of amphetamines in athletics:

"Since the use of any drug to improve athletic performance has already been made grounds for disqualification by the International Amateur Athletic Federation, the Amateur Athletic Union and the United States Olympic Association as being contrary to the highest ideals of sportsmanship, and since the use of amphetamines even in moderately small doses is known in many instances to result in habitation and harmful effects, the Committee has recommended that the use of amphetamines for this purpose be condemned. Because these drugs can be obtained legally only on prescription, a serious obligation devolves on physicians to help prevent such usage by prescribing them only for well recognized medical indications."

EPIDEMIOLOGY

Most of the information about the extent of doping has filtered down in assorted publications as comments by professional athletes or as reports from a few urine tests done at competitions. While vocal sports participants describe drug usage as rampant, the few urine analyses tend to suggest the opposite.

Amphetamines have traditionally been the most frequently abused drugs. According to researchers from the Institute for the Study of Sport and Society, these drugs are most widely used in football. Many players rely on amphetamines to get themselves "up" for the rugged physical contact the game requires. Bill Gilbert has expanded the list to include such sports as auto-racing, basketball, baseball, boxing, canoeing, cycling, golf, mountain climbing, Roller Derby, rodeo, rugby, skating, skiing, soccer, squash, swimming, tennis, track and field, weight lifting, and wrestling. In addition, combinations of amphetamines and barbiturates are often used. Jim Bouton in his Book *Ball Four* estimates that as many as 40% of the major league players use "bennies" (benzedrine) or "greenies" (amphetamine-barbiturate mixture). The *New York Times*, October 1971, referred to a well-known French cyclist who said, "Everyone in cycling dopes himself, those who claim they don't are liars."

Additional statements issued to the press by athletes indicate that the use of anabolic steroids is widespread. In the *London Times* of August 24, 1972, a world record holder for discus throwing stated that he believed that all the throwers or weight lifters of any ability in the 1972 Olympics had taken or do take anabolic steroids. Another decathlon performer claimed that over one-third of the United States track and field teams used steroids during the pre-Olympic (1968) training. (The *New York Times*, October 1971).

These impressionistic statements, though, are not substantiated by the few studies that have been done. However, foreknowledge that tests were going to be taken might have discouraged athletes who would normally use ergogenic aids from using anything that might be detected in the urine analysis. Consequently the few reported tests may not be any more reliable than the athletes' personal estimations.

In 1967 in Winnipeg all the cyclists at a competition were tested. No evidence of amphetamine use was found in the first six contestants, although at least six losers had positive tests. At the IX British Commonwealth Games tests were carried out on 115 urine specimens taken at random. In one sample phenylpropanolamine was detected, although this was judged to be legitimate as Eskomade had been prescribed for nasal congestion a few days earlier. None of the other samples contained any amphetamines or narcotic analgesics.

CONTROLS

Tests are available which can detect some but not all the commonly abused drugs. For the most part by analyzing the urine of competing athletes, chemists can judge if substances such as amphetamines or narcotic analgesics have been used (Beckett, Tucker, Moffatt, 1967). The IX British Commonwealth Games in Edinburgh 1970 were the site of strictly controlled tests of athletes. Before participating in the Games, a competitor was required to sign on his or her entry form a declaration that he or she agreed to submit to any tests or examination by qualified medical personnel appointed by the Federation sponsoring the events. Although no information was given about the range of drugs to be covered in the analytical procedures, definitions of doping as well as a listing of illegal substances were provided. These banned agents were: sympathomimetic amines such as amphetamine, methylamphetamine and ephedrine; stimulants of the central nervous system such as strychnine, cocaine and bemigride; and narcotic analgesics such as morphine, methadone and dipipanone and anabolic steroids.

Because athletes were accompanied by their own attending physicians, provisions were made to permit the use of drugs for therapeutic reasons. A doctor treating an athlete had to notify the Medical Commission in writing if a prescription contained any ingredient which might be regarded as dope.

Competitors were selected at random from the heats and finals of athletics, badminton, boxing, cycling, fencing, swimming, weight lifting and wrestling. In addition, medal winners in cycling events were taken routinely. Immediately after the competitor had finished the event, he or she was taken to the Medical Commission offices and asked to pass a urine specimen. To avert the chance that athletes might try to substitute specimens, this was done under the supervision of a nurse. The pH was measured at the time of collection, and then the specimen was divided between two bottles which were coded and sealed in the presence of the competitor. One bottle went immediately to the laboratory, while the other was stored in a refrigerator until the results were known. If there was a positive report that was contested by a Games participant, the second identical sample was available for analysis by different chemists. In this way, 115 specimens were collected from a sample population of the 1289 competitors.

Three unmarked control samples accompanied the specimens to the laboratory, where tests were done which could identify the presence of all the drugs listed except the anabolic steroids. The first step in the analysis was the determination of the pH content of the urine, as this affects the rate of excretion of many drugs. Normally after physical exercise the urine is acidic, but sodium bicarbonate may sometimes be used to counteract the fatigue associated with acidosis. In larger doses it may produce an alkaline urine of about pH 8 which considerably reduces the elimination of a drug such as amphetamine.

In the actual analysis, gas-liquid chromatography was used for the initial screening. Definite identification is achieved through two methods: gas chromatography of derivatives and mass spectrometry. These techniques can usually detect a drug and its metabolites in urine for up to 48 hours after its ingestion. Although thin layer chromatography was included as an additional check, it is not as good a test as the other techniques. It is necessary to use a process which will detect both the drug and its metabolites because the presence of the latter suggests that the drug has been ingested, but not added directly to the urine.

With these methods, the three control samples were identified as positive. In addition, one other sample was identified as containing phenylpropanolamine. These efforts have been duplicated to a certain extent in other competitions. For example, at the 1968 and the 1972 Olympics, tests were conducted on competitors. For the most part these attempts at control have been welcomed by athletes.

DISCUSSION

Various athletes and sports writers have vocalized their feelings that drug use among athletes is extensive:

"I guess it wasn't too good for my elbow, though. When I got through pitching, it felt like somebody had set fire to it. I'll treat it with aspirin, a couple every four hours or so.

"I've tried a lot of other things through the years like butazolidin, which is what they give to horses. And DMSO, dimethylsulfoxide. Whitey Ford used that for a while. You rub it on with a plastic glove and as soon as it gets on your arm you can taste it in your mouth. It's not available anymore though. Word is it can blind you. I've also taken shots—novacaine, cortisone and xylocaine. Baseball players will take anything. If you had a pill that would guarantee a pitcher 20 wins, but might take five years of his life, he'd take it." (*Jim Bouton, pitcher for the New York Yankees and the Houston Astros*)

A sportswriter in the *New York Times* wrote:

"At the 1968 Olympic Games in Mexico City athletes and coaches were not involved in debating the morality or propriety of taking drugs. The only debate was over which drugs were most effective and what kinds of amphetamines could go undetected in the tests Olympic Officials were requiring athletes to take at the conclusion of their competition." (*Jack Scott, author of The Athletic Revolution*)

There are numerous ethical questions surrounding the use of drugs in sports. Exactly what is legitimate and what is illegitimate is subject to discussion. For example, a coach in an interview replied to a question concerning the use of cortisone on the famous Sandy Koufax' elbow (Koufax, a star pitcher with the Los Angeles Dodgers, had an arthritic elbow that required constant treatment and which eventually forced his retirement at the height of his career.):

"This [cortisone] is a legitimate treatment, it is often given nonathletes for such things as bursitis and arthritis. These drugs can break the pain cycle and enable a player to perform, but he should never play while still under the immediate influence of the drug. I recommend its use many hours prior to the contest. I see nothing wrong with that at all." (*Tom Monforti, health instructor and trainer of athletic teams at Loyola Academy, assistant trainer for the Chicago Cardinals and the Chicago Packers*)

However, other writers, condemn the use of any drugs which mask pain or fatigue. For example, in describing the use of corticoid hormones and ACTH, one prominent pharmacologist writes:

"Furthermore they may serve to reduce the symptoms of inflation including such reactions as local swelling and pain, which may cause discomfort to the sportsman. However, pain has the physiological function of a warning signal resulting in a reduction of activity, especially of movement in the extremities involved. A suppression of these symptoms for the purpose of being able to take part "in a more effective way" in sporting competition is highly objectionable from the medical point of view especially if physical effort is required. The same obtains in the use of analgesics and local anesthetics for this purpose." (*E. J. Ariens, Department of Pharmacology at the University of Nijmegen, the Netherlands*)

Finally there are objections to doping on the grounds that the use of drugs is not compatible with the goals and purposes of sporting activities:

"Sport is a matching of two or more peers to determine who can best perform certain physical feats. For sport to be of interest, to have emotional impact, to be an artistic or a commercial success, the contestants must be as equal as possible. None should be allowed an artificial advantage over the others and just as important all suspicion of such advantage should be eliminated." (*Bill Gilbert, writer in Sports Illustrated*)

"The real objection to doping is not based on the question whether it is harmless or not or whether it is effective or not. The point is that the sportsman himself should decide with his competitors not to use artificial means which might increase their performance, because they want to compete on a basis of natural capacities. If they decided to do so, then there is a clear definition of what will be called doping under these circumstances. I think this is the only fair way to treat the situation because the sportsman is not a pharmacologist and he should look at it from a sportsmanlike point of view. It is not the question whether the drug damages or not which determines whether he will reject it. If sportsmen agree to compete without using unnatural means it should be stated at the beginning of the match. But if they do not want to agree upon it, they are perfectly free to do so." (*J. Ariens*)

Another author at the Society for the Study of Drug Addiction (London, 1958) wrote:

"If drugs can be selected with a stimulating or inhibitory effect of advantage to athletes, with the guarantee that no immediate or ultimate harm is suffered and fulfilling the requirement that they be free from secrecy and universally available, what objection would there be to their employment?" (*A. Abrahams*)

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APPENDIX 8

RESOLUTIONS APPROVED FOR THE YEAR 1972 BY THE GOVERNING COUNCIL OF THE AMERICAN SCHOOL HEALTH ASSOCIATION, SAN DIEGO, CALIFORNIA, OCTOBER, 1972

RESOLUTION NO. 1—SCHOOL NURSE PRACTITIONER

The American School Health Association has noted in resolutions in previous years the need for study and review of current utilization of health manpower in terms of function and preparation, and also the need for new and innovative approaches to provision of health services for children and youth in the school and in the community.

In 1970, the Association recognized the shortage of school physicians as a primary factor in making it increasingly difficult to arrange school health examinations and to meet the health service problems of youth. In keeping with such resolutions adopted earlier, the ASHA recognizes the emerging role of the school nurse practitioner as being a school nurse with additional appropriate education to enable her to conduct health appraisals of children attending school, preferably in a child-nurse-parent health conference.

Accordingly, the Association believes it is desirable for concerned school health leadership to plan jointly with local medical societies and institutions of nursing and medical education for the development of appropriate educational programs for qualified school nurses. Also, emphasis needs to be given to interpretation to boards of education of the value of the school nurse in this extended role and the need to provide assistance to the nurse with respect to non-professional tasks to enable her to implement properly her functions as a school nurse practitioner.

RESOLUTION NO. 2—DRUG USE IN SPORTS

Recently there has been much reference made to the use of pharmaceutical substances as an aid to performance by professional athletes. It is well known that junior high school and senior high school athletes are inclined to emulate the professional.

Unfortunately, drugs are available to such young athletes through a variety of channels. Also, many people are misinformed as to the physiological effects of various drug substances upon athletic performance. In addition, the exact effect of some remained to be demonstrated.

Therefore, the American School Health Association condemns the use of substances such as hormones, stimulants, and narcotics for the purpose of enhancing performance in sports and further recommends that qualified personnel make a special effort to inform all coaches and athletes particularly those in junior and senior high schools of the unpredictable effects and potential hazards involved in the use of such substances.

RESOLUTION NO. 3—SCHOOL MEDICAL APPRAISALS

It is important that schools have an adequate health evaluation of all pupils at, or soon after, their enrollment to plan their best educational program. However, some physical and emotional conditions may develop during their school years that would be benefitted by further testing and medical evaluation.

The American School Health Association, therefore, strongly urges school health and educational leaders to give priority to obtaining an adequate medical appraisal at or near enrollment and thereafter when health manpower is in short supply.

The American School Health Association also urges all state departments of education and state departments of health to encourage and promote private, clinic, or school physician medical evaluations on all pupils at or near enrollment and thereafter give priority to such appraisals when health problems or school situations arise that indicate that medical evaluation of a child is warranted. Periodic medical appraisals, at appropriate grade levels, can have value but are less significant than those made at entrance to school or done to meet an apparent need.

RESOLUTION NO. 4—PRE- AND IN-SERVICE EDUCATIONAL PROGRAMS FOR SCHOOL HEALTH PERSONNEL

The American School Health Association recognizes the need for specific attention to pre-service and in-service education programs for school nurses, health educators and other school health personnel in order to provide effective school health programs.

The American School Health Association therefore urges each chief state school officer to request appropriate certification personnel to take prompt action to develop and promote improved pre-service education standards for school health personnel in each state.

The American School Health Association also urges each chief state education official to encourage each superintendent of a local school district to take an active part in planning inservice education programs, for all school personnel, that will reflect the health and developmental needs of the school-age child.

The American School Health Association further urges that each state department of education make qualified school health personnel available to assist local school districts in the development of such in-service education programs.

RESOLUTION NO. 5—SICKLE CELL DISEASE

Sickle cell anemia is an inherited disease passed from parent to child through a gene called the "sickle cell trait," and sickle cell anemia is often a fatal disease, terminating in death by the age of twenty in approximately half of those afflicted.

Approximately ten percent of our black population as well as a lesser number of our population with Mediterranean ancestry carry the sickle cell trait. Despite these facts, public education concerning this condition is very limited, and it is extremely important for all black Americans to find out if they carry the trait.

Therefore, the American School Health Association encourages efforts on the part of all of its members as well as affiliated professional groups pertaining to sickle cell disease. The ASHA also urges state, county, and local health departments to promote sickle cell programs and disseminate information concerning the disease through health courses in all schools, especially those with a sizable susceptible population.

RESOLUTION NO. 6—CERTIFICATION OF HEALTH EDUCATORS

Health education has a body of knowledge unique unto itself. This body of knowledge must include a basic understanding of health as well as teaching techniques and procedures. Therefore, a health educator who is properly prepared in both health and teaching methods is essential.

Accordingly, the American School Health Association urges state departments of education to develop certification requirements relating to health education for secondary schools that demand either a major or minor in health education.

The Association also recommends that these requirements for certification be vigorously enforced so that all health teachers in secondary schools will be in compliance with them.

To assure high quality, effective leadership in health education, the American School Health Association urges state departments of education to develop separate standards for the certification of health educators who will be working in schools. The American School Health Association also recommends that such standards for certification be enforced.

RESOLUTION NO. 7—ANTI-HEALTH BEHAVIOR

Many of the ailments suffered by the American people, including children and youth, are to a large extent self-inflicted by anti-health behavior. Such anti-health behavior, including smoking, overeating, underexercising, drug (alcohol) abuse, are known to be detrimental to individual wellness and welfare.

Schools have an opportunity to play a major role in combatting these anti-health practices through comprehensive health education programs during the formative years.

The American School Health Association, therefore, recommends that schools take advantage of this great opportunity in the health curriculum to emphasize education and motivation with respect to these anti-health practices.

RESOLUTION NO. 8—HEALTH EDUCATION RELATED TO HEALTH CARE

At the time a person receives preventive or remedial health care, a "teachable moment" obviously exists. At such moments the individual is potentially receptive to health education and more easily motivated than otherwise. This presents an unusual opportunity for involved school health personnel to inform and motivate the child or youth concerned.

Accordingly, the American School Health Association recommends that involved health personnel, wherever possible, utilize episodes of health care as opportunities for reinforcing health teaching. To realize the greatest potential in this sphere, a professionally prepared health educator should be utilized as a member of the health team in the planning for various forms of health care services.

EMERGENCY RESOLUTION—VISION SCREENING METHODS FOR SCHOOLS

Determination of the most efficient, adequate, and economical method of vision screening for use in schools has been a subject of national interest for many years. There are a number of test procedures available today, but school authorities have no current guidelines for their evaluation. This situation demands a major research project designed to objectively compare the various testing procedures in terms of their relative accuracies and values and to identify those that might be recommended for use in schools. Therefore, the American School Health Association urges the National Society for Prevention of Blindness, along with other appropriate organizations, to initiate such a study patterned in general after the one carried out in St. Louis in 1948. The American School Health Association offers its full cooperation in planning and conducting such a study.

FRED V. HEIN, PH. D.,
Chairman of Resolutions Committee, 1971–72.

APPENDIX 9

[From the San Francisco Chronicle, Mar. 1, 1972]

ATHLETICS AND DRUGS—A GROWING MENACE

(By Dave Reznick)

(Staff Writer)

The Cameo of a Stoned Age All-American:

All week in practice he is as loose as a pup, frolicking through the patterns, with only an occasional yip to compliment a blocker for wiping out a tackler.

Come Saturday he shows up in the locker room as taut as wire, his eyes dilated, chattering compulsively, his heart racing like an Offy engine.

In the game he goes berserk, outrunning his blockers, slaming the ball to the ground as he crosses the goal, then circling back toward the bench with leaping yells of "Nobody can stop me Nobody can stop me!"

Sound far fetched? It shouldn't. The symptoms are those of an amphetamine high. Upon rising on game day our hero had "dropped" a couple of "caps" of, say, Dexedrine, fascinated, as he held the celluloid by the tiny orange and brown beads within.

The "breakfast of champions" for countless pros is already a pep pill or two. High school teams have been known to take them en masse and it is a spreading threat at the college level.

Although conclusive data on the use and effect of drugs often is difficult to come by, most doctors in the field of sports medicine will grant that doping is a proliferating jungle which must be checked before it buries the athletic arena.

Such concern was evident in the symposium, "The Physician and Athletics," conducted this weekend at the University of California Medical Center. It was sponsored by Student Health Services of Cowell Hospital in Berkeley, in cooperation with the program of Continuing Education in Health Sciences, U.S. Medical Center, San Francisco.

Dr. Jerome H. Patmont of Berkeley, the University of California's team physician, discussed, "Drug Use and Abuse in Athletics."

Dr. Patmont, a tall bouncy native of Berkeley, told the Examiner that while actual drug taking was a minor problem among college athletes, even on such a "far out" campus as Cal, the continuous pressure to win and the growing emphasis on professionalism conspired to escalate interest in stimulants.

"In the last few years we've had only a couple of cases—a linebacker and an offensive center—who took something to get up for a game," Dr. Patmont said. "Usually the known violators are marginal kids who barely made the club.

"Most of our kids are blue chip all the way. They're highly motivated, they want to excell. They do it by conditioning and perfecting skills rather than by swallowing pills."

The doctor praised Coach Ras Willsey's attitude for making his job easy. "Willsey is a man of iron," Dr. Patmont said. "He's not like some coaches who'll come around to the team doctor and ask, 'Can you get this guy ready by Saturday? He simply asks, 'Who's available?' and builds his game plan accordingly." Cal doesn't countenance the making of injury by shooting novocaine.

The problem of pep pills. Dr. Patmont said, extends also to such athletes as swimmers or runners who want to improve their performances. There have been studies, such as those at Harvard, indicating that individual standards can be improved by thereapeutic doses of amphetamine, the physician said.

A far more serious concern at college level, he said, because of growing worldwide popularity of the habit is the use of anabolic steroids—literally, body-building hormones.

Steroids—a favorite, for example, is Dianabol, a pink pill which a few years ago was dispensed as freely as salt tablets by the San Diego Chargers—and weight and, supposedly, strength.

The hormones are also big with weight lifters and the muscle guys and dolls of track and field.

"You can imagine the temptation to use this stuff by a college kid who, say, is 6-feet, 4 inches and 215 pounds and gets a letter from a pro club saying they would be interested in him if he could put on 20 or more pounds," Dr. Patmont said.

While a recent survey indicated that about half of the top track weightmen in the country were on steroids, they have many drawbacks, just as amphetamines have. An overdose of pep pills can be fatal and a "comedown" is always depressing. With steroids, undesirable side effects include possible atrophying of the testes and blunting of the sex drive.

The whole question is rendered more complex. Dr. Patmont added, by the current drug culture. A lot of kid athletes take dope because it is so readily available.

Dr. Patmont mentioned Cal track coach Dave Maggard, himself a competitor in the recent Olympics, as being especially concerned about the competitive aspect of the question—what do you tell a kid who wants to be straight, but resents a rival gaining an advantage from drugs.

"I say 'Well, Dave, maybe we can't be competitive.'" Dr. Patmont said. But he realizes this doesn't satisfy Maggard. The former shotputter has gone on record as saying that he wished some respectable scientific group would really study certain drugs and "tell us yes or no whether they are effective and yes or no whether they are dangerous. Then I'd like to see the NCAA, the AAU, and the U.S. Olympic Committee tell the conferences to go ahead and put us straight—tell all of us to either use the drugs or don't."

APPENDIX 10

[From the New York Times, Jan. 24, 1971]

COLLEGE COACHES WARNED TO BE ALERT TO DRUG USE

(By Gordon S. White, Jr.)

Two medical authorities in the field of sports have warned coaches and athletic directors of the serious implications of stimulants and other drugs on the lives of athletes who seek "an easy ride to victory."

Dr Donald L. Cooper of Oklahoma State University and Dr. Hardin Jones of the University of California spoke to track, baseball and football coaches and athletic directors at the recent National Collegiate Athletic Association convention in Houston, telling them that there is sufficient indication of the use of drugs by athletes to warrant constant vigilance.

220-POUNDER GOES TO 280

Dr. Cooper, director of health services at Oklahoma State and the United States Olympic team physician in 1968, said, "We know that drugs are being used by athletes more than anyone officially has knowledge of."

Dr. Cooper and Dr. Jones, professor of medical physics at Berkeley, Calif., referred not only to stimulant drugs or pep pills but also to weight-building drugs known as anabolic steroids.

Dr. Cooper said: "When you see a freshman athlete come into college weighing 220 pounds, and three years later you see him out there as a senior weighing 280 pounds, you suspect seriously that this guy has been taking anabolic steroids. I have suspected the use of pep pills or bennies even by some of my own athletes at Oklahoma State."

Dr. Cooper said, "Maybe coaches and trainers aren't giving drugs to athletes overtly, but I imagine some are turning their backs where they have knowledge that their kids are using them."

He said these drugs were obviously coming from the same sources that supply the nonathletic drug users on campus.

"The trouble is," Dr. Cooper said, "we're notoriously on the prowl for a gimmick—an easy ride to victory. That's human nature. But there is no short cut to better athletics. And it's like playing Russian roulette—there comes a time when you must pay the piper."

SERIOUS CONSEQUENCES

Both physicians warned athletes about such future consequences as sterility and the inability to concentrate on a job after three or four years on drugs.

Dr. Jones said, "More and more evidence is coming in to show it is, in reality, the losers who are involved with drugs."

Dr. Cooper said that tests were taken "only on the winners" at the 1968 Olympics. "They should have tested the losers as well, and then they might have found many drug users at Mexico City."

One of the world's outstanding weightmen in the 1960's told Dr. Cooper he took anabolic steroids to increase his weight and improve his performance.

"But he told me he gave them up because he found he didn't do better weighing 285 pounds than he did weighing 265 pounds. In fact, he said he did worse."

The Oklahoma physician said, "Paradoxically, the user of stimulants think, at the time, he is doing better while in fact he is doing poorly on the field."

He said: "In the problem sports such as football, basketball and baseball, where a man must react to quick change, he can't react fast enough under the influence of stimulants. In the non-problem sports, such as swimming and track, he starts his flow of adrenalin too early when he takes a pill in the dressing room. He may tire quickly."

The doctor concluded: "If you're going to have sports, let them be normal sports. We're taking the point that clean competition should be based on the results of a man's ability and his own efforts to develop himself unimpaired and unhelped by artificial means."

APPENDIX 11

THE QUEST FOR ERGOGENIC AIDS

(By William M. Fowler, Jr., M.D.,* From the Division of Rehabilitation, Department of Medicine, School of Medicine, University of California at Los Angeles)

ABSTRACT

The use of ergogenic aids in an attempt to improve performance in sports has plagued coaches, trainers and physicians for many years. Whether nutritional, physical or pharmacological, there is little evidence that these aids have a significant beneficial effect on physical performance. Furthermore, the use of many of these substances, such as drugs, results in undesirable and often dangerous side effects, and the legal and ethical implications of healthy individuals using a drug in the quest for advantage in sports cannot be disregarded.

Ergogenic is defined as increasing the capacity of bodily and mental effort, especially by eliminating fatigue symptoms.[1] Ergogenic aids, therefore, would include nutritional, physical and pharmacological agents. In addition to the ethical and legal implications of using aids to increase physical performance in normal individuals, several principles should be considered in evaluating the effectiveness of an ergogenic agent.

First, is there any physiological need for a particular substance. An example of this is the use of vitamins to supplement a normal well balanced diet. Since exercise does not increase vitamin requirements and it is impossible to supercharge the cells by providing an excess of vitamins, there is no logical reason to use them. On the other hand, salt and water replacement has a sound physiological basis, since profuse sweating can result in a depletion of sodium chloride.

Second, is the methodology used in evaluating an ergogenic aid objective, valid and reliable. There are many variables involved in sports such as skill, training and motivation, and it is impossible to subjectively evaluate the effect of a substance upon team or individual performance. Any study should be viewed with caution if it does not utilize controls and quantitative measurements.

Third, were the changes reported in a study pertinent to the topic under investigation. For example, the reasons for evaluating anabolic drugs would be to determine their effect on strength and physical performance. The fact that weight might increase is interesting but immaterial. Indeed, to equate increases in weight with a possible increase in strength could be erroneous, since there is considerable evidence that much of the increase in weight is due to water retention.

Fourth, are the known side effects of an ergogenic aid severe and frequent enough to outweigh any potential benefits. There should be little doubt that the marked physiological effects of anabolic drugs in women and prepubertal males precludes their use in young boys as well as in females of any age. In the postpubertal athlete, the possibility of testicular atrophy, change in libido, liver damage and edema would also appear to outweigh any possible increase in strength.

NUTRITIONAL ERGOGENIC AIDS

Nutritional ergogenic aids are specific foods, vitamins and inorganic substances added as supplements to a normal well balanced diet in healthy individuals. Although there is a sound nutritional basis for optimal performance, there is no evidence that any special food or vitamin can improve athletic ability.

Protein and Carbohydrate

Protein or amino acid supplements to the training diet have been traditional for many years, although several studies have shown that protein is not metabolized in significant amounts during exercise in well nourished individuals[2, 3].

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[1] Tips on Athletic Training, VII: American Medical Ass'n., Chicago, 1965, pp. 8–10.

[2] Van Itallie, T. B., Sinisterra, L. and Stare, F. J.: "Nutrition and Athletic Performance," in Johnson, W. R.: *Science and Medicine in Exercise and Sports*, New York, Harper and Brothers, 1960, chap. 15, pp. 285–300.

[3] Nagamine, S.: Experimental Studies on Protein Metabolism in Relation to Physical Exercise, II. Japan J. Nutrition 9:6, 1951.

Gelatin, an incomplete protein rich in the amino acid glycine, or glycine itself are still frequently advertised as sources of instant energy. The increased work output and decreased fatigue reported in preliminary studies [4, 5, 6] has subsequently been shown to be due to training [7,8]. Use of protein supplements to increase strength is also doubtful. Both Nelson [9] and Rasch [10] have shown that additional protein added to the diet of either football players or normal males receiving resistive exercises failed to improve performance on motor tests or to increase weight, girth and strength.

It is more logical to understand why increased performance has been attributed to the use of sugar as an ergogenic aid, since there is an increased utilization of carbohydrates during strenuous activity. The capacity to endure prolonged muscular work is enhanced if carbohydrate stores are repleted prior to the exercise. There is no evidence, however, that sugar as a pre-event supplement increases athletic performance. Both Pampe [11] and Karpovich [12] were unable to find any effect from the ingestion of sugar on tests of short duration, and Haldi and coworkers [13], showed that performance in swimming 100 yards was the same regardless of a high or low carbohydrate meal taken three hours before the event. During brief periods of very strenuous exercise, muscular efficiency is dependent upon energy reserves and training and not on the composition and size of any pre-exercise supplement.

Vitamins

Vitamins are essential for the maintenance of normal metabolic functions and must be furnished from exogenous sources since they are not synthesized by the body. A healthy individual ingesting a well balanced diet receives adequate amounts of all vitamins. Therefore, the use of vitamins in normal individuals without a specific deficiency represents nothing more than expensive placebos. A vitamin deficiency may result from inadequate intake, disturbance in absorption, faulty utilization or increased tissue requirements in terms of growth. When vitamins are used in such exigencies, they are considered as drugs.[14] The rationale for vitamin supplements apparently involves the assumption that vitamin requirements are increased during exercise, or that it is possible to supercharge the cells of the body by providing an excess of vitamins. It is, of course, impossible to "over supply" the tissues since most vitamins cannot be stored, and any excess amount is rapidly excreted. In addition, vitamin requirements are not increased before or during strenuous exercise.[15]

The effects of vitamins C, nicotinic acid B, and E on physical performance have been extensively studied. Supplements of C and B, separately or in combination, have failed to produce increased endurance, muscular efficiency or motor performance in well controlled studies.[16, 17, 18] Vitamin E, wheat germ oil, and octacosanol are probably the most popular ergogenic aids in this country, and are advertised as "cure-alls" for improving mental and physical fatigue.

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[4] Wilder, R. M.: Glycine in Myasthenia Gravis, Proc. Staff Meet., Mayo Clinic, 9:606, 1934.

[5] Ray, G. B., Johnson, J. R., and Taylor, M. M.: Effect of gelatine on Muscular Fatigue, Proc. Soc. Exper. Biol. and Med., 40:157, 1939.

[6] Kaczmarek, R. M.: Effect of Gelatin on the Work Output of Male Athletes and Non-athletes and on Girl Subjects, Res. Quart., 11:109, 1940.

[7] Hellebrandt, F. A., Rork, R. and Brogdon, E.: Effect of Gelatin on Power of Women to Perform Maximal Anaerobic Work, Proc. Soc. Exper. Biol. and Med., 43:629, 1940.

[8] Karpovich, P. V. and Pestrecov, K.: Effect of Gelatin Upon Muscular Work in Man, Am. J. Physiol., 134:300, 1941.

[9] Nelson, D. O.: Effects of Food Supplement on the Performance of Selected Gross Motor Tests, Res. Quart., 35:627, 1960.

[10] Rasch, P. J. and Pierson, W. R.: Effect of a Protein Dietary Supplement on Muscular Strength and Hypertrophy, Am. J. Clinical Nutrition, 11:530, 1962.

[11] Pampe, W.: Hyperglykämie und Körperliche Arbert, Arbeitsphysiol., 5:342, 1932.

[12] Karpovich, P. V.: *Physiology of Muscular Activity*, 6 ed., Philadelphia, W. B. Saunders 1965, pp. 261–278.

[13] Haldi, J. and Wynn, W.: Effect of Low and High Carbohydrate Meals on Blood Sugar Level and Work Performance in Strenuous Exercise of Short Duration, Amer. J. Physiol., 145:402 1946.

[14] Goodman, L. S. and Gilman, A.: *The Pharmacological Basis of Therapeutics*, 3 ed., New York, MacMillan, 1965, pp. 1, 27–28, 285–311, 1566–1578, 1649.

[15] Rose, K. D., Mathena, S., and Sullivan, G.: Vitamin B_{12} in Athletics; A Negative Report, Unpublished Communication.

[16] Hilsendager, D. and Karpovich, P. V.: Ergogenic Effect of Glycine and Niacin Separately and in Combination, Res. Quart., 35:389, 1964.

[17] Karpovich, P. V. and Millman, N.: Vitamin B_1 and Endurance, New Engl. J. Med., 226:881, 1942.

[18] Montoye, H. J. et al.: Effects of Vitamin B_{12} Supplementation on Physical Fitness and Growth of Young Boys, J. Appl. Physiol., 7:589, 1955.

Seven related compounds exert vitamin E activity. Of these, alpha tocopherol is the most potent. Quantities are present in a wide variety of foods, although the richest sources are some types of vegetable oils. Tocopherols are natural antioxidants of foods and are believed to be effective in preventing oxidation of fats. Vitamin E deficiency states have been induced in many species, although no pathological counterpart to the muscular dystrophy of vitamin E deficient animals has been found in humans. Deficiencies have been induced in humans through the feeding of polyunsaturated fatty acids from which most of the tocopherols have been removed.[19] A disturbance in absorption or utilization of tocopherol is also found in children with steatorrhea due to cystic fibrosis, portal cirrhosis and biliary atresia. Serum tocopherol concentrations in these children ranged from 50 to 75% of normal. Although the administration of vitamin E increased tocopherol levels, there was no change in muscle strength.[20] It is difficult, therefore, to imagine how the administration of vitamin E to healthy athletes with a normal diet could possibly improve their strength, endurance and performance when the administration of vitamin E failed to improve strength in patients with a severe deficiency.

Many experiments have been carried out in both humans and animals concerning the value of wheat germ oil as an ergogenic aid. Cureton and his associates[21] presented data showing that subjects taking a wheat germ oil supplement made greater gains in physical fitness measurements than did subjects taking vitamin E, a placebo, or exercise alone. Studies on athletic teams, however, failed to produce any conclusive evidence in favor of wheat germ oil. Percival[22] reported a decrease in the recovery pulses of men after a step test or following a 440 yard run. Ershoff and Levin[23] found that diets containing wheat germ oil prolonged the time it took guinea pigs to swim to exhaustion. Rats fed wheat germ oil did not, however, increase their swimming time when compared to a group fed corn oil. Consolazio and associates[24] also found that the performance of rats receiving vitamin E or wheat germ oil or octacosanol did not differ from that of control groups. The failure of wheat germ oil to produce significant results with athletic teams in competition or with rats in swimming tests casts considerable doubt on its usefulness.

Other Nutritional Supplements

Potassium, calcium, magnesium, phosphorus and sodium chloride supplements have also been used as ergogenic aids. Even with minimal dietary conditions, humans are rarely subject to any deficiency in these elements, and excess amounts are rapidly excreted from the body when renal function is adequate. However, excessive sweating in hot weather may bring about a sodium chloride deficiency resulting in heat cramps and hyperpyrexia, and work capacity in a hot environment is markedly reduced when salt is restricted from the diet.[24a] The addition of salt as a supplement in hot weather is only a precautionary measure, of course, to prevent heat cramps and hyperpyrexia. Under normal conditions it is not a source for extra energy and endurance.

Lecithin, a phosphatide, was orginally thought to be associated with increases in strength,[25] but controlled studies have showed no beneficial effects.[26] Phosphates have been used as ergogenic aids with conflicting results. As is the case with most ergogenic supplements, beneficial results reported in early subjective studies were not confirmed by subsequent objective experiments[27, 28]. Alkalinizing procedures with sodium citrate and bicarbonate as well as fruit juices have also been used in an attempt to prevent the lactacidemia and ketonemia of exercise. Although reports in the early literature indicated increased performance and endurance, subsequent studies concluded that any changes produced in the "alkaline reserve" by dietary manipulation would have little influence on the ability of normal individuals to perform muscular work.[29, 30]

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[19] Horwitt, M. K.: Vitamin E and Lipid Metabolism in Man, Amer. J. Clin. Nutr., 8 :451, 1960.

[20] Levin, S. et al.: Studies of Tocopherol Deficiency in Infants and Children. VI. Evaluation of Muscle Strength and Effect of Tocopherol Administration in Children with Cystic Fibrosis, Pediatrics, 27 :578, 1961.

[21] Cureton, T. K., and Pohndorf, R.: Influence of Wheat Germ Oil as a Dietary Supplement in a program of conditioning Exercises with Middle Aged Subjects, Research Quart., 26 :391, 1955.

[22] Percival, L., Quoted by Consolazio, C. R., *et al.*: Effect of Octacosanol, Wheat Germ Oil and Vitamin E on Performance of Swimming Rats, J. Appl. Physiol, 19 :265, 1964.

[23] Erschoff, B. H. and Levin, E.: Beneficial Effect of an Unidentified Factor in Wheat Germ Oil on the Swimming Performance of Guinea Pigs, Federation Proc., 14 :431, 1955.

[24] Consolazio, C. F. et al.: Effect of Octacosanol, Wheat Germ Oil, and Vitamin E on Performance of Swimming Rats, J. Appl. Physiol., 19 :265, 1964.

[24a] See footnote 12.

[25] Atzler, E. and Lehmann, G.: Die Wirkung von Lecithin auf Arbeitsstoffwechset und Leistungsfähigkeit, Arbeitsphysiol., 9 :76, 1936.

[26] Staton, W. M.: The Influence of Soya Lecithin on Muscular Strength, Res. Quart., 22 :201, 1951.

[27] Schorn, M.: Ueber die Wirkung des Recresals auf die Körperliche und Geistige Leistungsfähigkeit, Münch. Med. Wchnschr., 79 :371, 1932.

[28] Marbe, K.: Ueber der Vermeintliche Leistungssteigerung Durch Recresal und Natrium Bicarbonicum, Arch. F. Exper. Path. U. Pharmakol., 167 :404, 1932.

Other substances have been tried in various combinations, the latest being the potassium and magnesium salts of aspartic acid. Its use is apparently based on the observation that exercise causes an elevation of blood ammonia, that this increase contributes to fatigue, and that the mixed salts of aspartic acid, aspartic acid alone, or ammonium carbonate would prevent the rise of blood ammonia [31]. Conflicting results have been found in both animals and humans. In animals, Barnes [31] and Laborit [32] found that the mixed potassium and magnesium salts of aspartic acid prolonged the time required for rats to reach physical exhaustion due to forced swimming. Similar experiments reported by Rosen [33] were equivocal, and Matoush [34] found that aspartic acid salts had no effect upon the swimming performance of rats and dogs. In humans, beneficial reports have been mostly based on subjective relief from fatigue [35]. In well controlled objective studies, the potassium and magnesium salts of aspartic acid produced no significant changes in fatigue, strength or physical performance [36, 37].

PHYSICAL AND MECHANICAL ERGOGENIC AIDS

Physical ergogenic aids include breathing oxygen, or the use of massage, mechanical devices and ultraviolet light. Most of these aids fall into the category of fads in that they represent exaggerated claims for some technique that might be beneficial if used in moderation. An example of this is isometric exercise which is a convenient and effective way of increasing muscular strength. Its limitations, however, must be recognized since isometric exercises do not assist range of motion or cardiovascular pulmonary endurance.[37a]

All objective experiments regarding the effect of vibrating cushions, belts and other mechanical aids have shown that these machines have no influence on performance, weight or metabolic fitness.[37b] Several studies have indicated a beneficial effect from ultraviolet irradiation on physical performance in runners, swimmers, oarsmen and stationary bicycle riders. The explanation for this is not clear, and is probably due to a psychological effect in most cases.[37b] Hettinger,[38] however, feels that ultraviolet light affects muscle by mediation through the adrenal gland and subsequent mobilization of the sex hormones.

Oxygen

Since one of the main limiting factors in physical performance is the amount of oxygen which the organism can take up, it would appear logical to assume that breathing pure oxygen might increase the capacity for exertion and recovery. Unfortunately, it is impossible to store oxygen.[12]

During the early 1900's, several investigators reported that the administration of oxygen before and after athletic events increased speed and endurance in running, reduced lactic acid accumulation, and quickened recovery from

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[29] Johnson, W. R. and Black, D. H.: Comparison of Effects of Certain Blood Alkalinizers upon Competitive Endurance Performance, J. Appl. Physiol., 5:577, 1953.

[30] Dill, D. B., Edwards, H. T. and Talbott, J. H.: Alkalosis and the Capacity for Work, J. Biol. Chem., 97:lviii, 1932.

[31] Barnes, R. H. et al.: Effects of Exercise and Administration of Aspartic Acid on Blood Ammonia in the Rat, Am. J. Physiol., 207:1242, 1964.

[32] Laborit, H., et al.: Influence de la Composition Ionique du Milieu Extracellulaire et Influence Comparee de L'acide Aspartique, de L'Aspartate de Potassium et du Glucose sur L'epreuve de Nage du Rat, Blanc. Compt. Rend. Soc. Biol., 151:1383, 1957.

[33] Rosen, H., Blumenthal, A., and Agersborg, H. P. K.: Effects of the Potassium and Magnesium Salts of Aspartic Acid on Metabolism Exhaustion, J. Pharm. Sci., 51:592, 1962.

[34] Matoush, L. O. et al.: Effects of Aspartic Acid Salts (mg and K) on Swimming Performance of Rats and Dogs, J. Appl. Psysiol., 19:262, 1964.

[35] Agersborg, H. P. K. and Shaw, D. L.: Physiologic Approach to the Problem of Fatigue, J. Sports Med. and Physical Fitness, 2:217, 1962.

[36] Nagle, F. J., Balke, B., and Ganslen, R. V.: Mitigation of Physical Fatigue Through Spartase, read before the American College Sports Medicine, Minneapolis, April 30, 1963.

[37] Consolazio, C. F. et al.: Effects of Aspartic Acid Salts (mg and K) on Physical Performance of Men. J. Appl. Physiol., 19:257, 1964.

[37a] See footnote 1.

[37b] See footnote 12.

[38] Hettinger, T. H.: Physiology of Strength, Springfield, C. C. Thomas, 1961, pp. 44–53.

fatigue.[39, 40] The remarkable success of the Japanese swimmers in the 1932 Olymp-
until today.

Karpovich[41] explained the reason for the apparent beneficial effect of preliminary oxygen inhalation when he demonstrated that swimmers increased their speed because they were able to hold their breath longer and, therefore, immobilize the chest. He also reported that it was impossible for prolonged breathing of oxygen to be more effective than the traditional three preliminary deep inhalations, since only 20% of the oxygen remained in the expired air two minutes later.[42] Other studies have also shown that oxygen inhalation prior to exercise does not have any effect on work performance, speed of running or rate of recovery.[43, 44] Workloads can be maintained for longer periods of time, however, if oxygen is administered during the exercise period.[45]

Massage

Muller and associates[46] have shown that massage allows quicker recovery from fatigue in the rest pauses following a period of work. Under conditions in which exhaustion was reached after one hour without massage, the maximal working time was tripled by the use of massage during the rest pauses. This was only temporary, however, for several work-rest cycles, and the subject had to pay for it later with a subsequent slow recovery. Asmussen[47] and Hale[48] were also unable to show that massage had any beneficial effect as an ergogenic aid.

PHARMACOLOGICAL ERGOGENIC AIDS

Pharmacological ergogenic aids are drugs,and a drug is broadly defined as any chemical agent which affects living protoplasm.[49] To both layman and physician, the use of drugs implies the prevention or cure of a specific disease. While a physical or nutritional supplement may be dismissed as a useless but harmless fad, it is difficult to find any legal or ethical basis for the utilization of drugs in the quest for advantage in sports. Unfortunately, the use of an ergogenic aid seems to depend on whether or not the substance is a stimulant or is habit-forming. If the drug is not a stimulant, its use apparently does not contravene the rules on doping of the Amateur Athletic Union or the International Amateur Athletic Federation, at least as interpreted by many athletes.

This interpretation is, of course, open to question. Stimulant is defined as "producing stimulation by causing tension on muscle fiber through the nervous tissue"[50]. In addition, drugs only stimulate or depress cellular activity since they cannot impart new functions to cells or tissue. It would also appear that habit-forming is being confused with addiction. Habituation usually refers to the psychic and emotional dependence on a drug, while addiction signifies a more basic physiological dependence and tolerance.[51] Few, if any, drugs are non habit-forming, and most drugs produce undesirable and often dangerous side effects depending on dose, tolerance, cumulative action, and individual idiosyncrasy or hypersensitivity.

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[39] Hill, L. and Flack, M.: The Influence of Oxygen on Athletes, J. Physiol., 38:xxviii, 1909.

[40] Feldman, I., and Hill, L.: The Influence of Oxygen Inhalation on the Lactic Acid Produced During Hard work, J. Physiol., 142:439, 1911.

ics with the use of oxygen established its reputation as an ergogenic aid even

[41] Karpovich, P. V.: Effect of Oxygen Inhalation on Swimming Performance, Res. Quart., 5:24, 1934.

[42] Karpovich, P. V.: Respiration in Swimming and Diving, Res. Quart., 10:3, 1939.

[43] Hill, A. V., Long, C. N. H. and Dupton, H.: Muscular Exercise, Lactic Acid, and the Supply and Utilization of Oxygen, Proc. Roy. Soc., London, S.B., 96:438, 96:455, 97:84, 97:155, 1924–25.

[44] Miller, A. T. et al.: Influence of Oxygen Administration on Cardiovascular Function During Exercise and Recovery, J. Applied Physiol., 5:165, 1952.

[45] Bannister, R. G. and Cunningham, D. J. C.: The Effects on the Respiration and Performance During Exercise of Adding Oxygen to the Inspired Air, J. of Physiol., 125:118, 1954.

[46] Müller, E. A.: Physiological Methods of Increasing Human Physical Work Capacity, Ergonomics, 8:409, 1965.

[47] Asmussen, E., and Bøje, O.: Body Temperature and Capacity for Work, Acta Physiol. Scandinav., 10:1, 1945.

[48] Hale, C. J.: The Effect of Preliminary Massage on the 440-Yard Run, Master's Thesis, Springfield College, 1949.

[49] See footnote 14.

[50] *Dorland's Illustrated Medical Dictionary*, 23d ed., W. B. Saunders, Philadelphia, 1961, p. 1305.

[51] See footnote 14.

Central Nervous System Depressants and Stimulants

The major central nervous system depressant is alcohol. Although seldom used by athletes as an ergogenic aid, it is important to determine its effect on performance since it is customary in some countries to drink wine or beer with meals. The apparent initial stimulation from alcohol results from the unrestrained activity of the lower centers of the brain which are freed by the depression of higher inhibitory control mechanisms. It increases neither mental nor physical ability, although familiar and habitual mechanical tasks are less affected than work requiring skill and attention. There is only a minor direct effect on respiration, circulation and skeletal muscle activity but the total amount of work accomplished may be increased due to lessened appreciation of fatigue. Karpovich [49b], in a review of the literature, notes that alcohol has a deleterious effect upon speed in swimming or running short distances, but that work output may be increased or oxygen debt reduced depending on the amount consumed.

Central nervous system stimulants that have been used as ergogenic aids include caffeine, camphor, cocaine, coramine, strychnine, and metrazol[49b].

Caffeine is a powerful central nervous system stimulant which produces a keener appreciation of sensory stimuli, increases motor activity, decreases reaction time, and allays fatigue. It is the least active of the xanthines in its effect on respiratory and cardiovascular function. With large doses, however, pulse rate, blood pressure, cardiac volume, respiratory rate, peripheral vascular resistance, and A–V oxygen difference decrease while cardiac output, stroke volume, left ventricular work, metabolic rate and respiratory volume increase. Its central and peripheral actions are antagonistic on the blood vessels, but a peripheral vasodilatory action predominates with therapeutic doses resulting in increased blood flow. Central stimulation is responsible for increased capacity for work by preventing the perception of fatigue although there is also a direct action on skeletal muscles. Several studies, reviewed by Karpovich,[49b] showed that caffeine increases work output but does not affect speed in running short distances.

The increased capacity for muscular work with cocaine is also primarily due to a lessened sense of fatigue. Action on the medulla results in an early increase in respiratory rate, but this soon diminishes. Heart rate is increased after moderate doses due to an increased central and peripheral sympathetic stimulation. Vasoconstriction occurs due to central vasomotor stimulation and results in an initial rise in blood pressure. There is no direct action of skeletal muscle so the ability to relieve fatigue results from central stimulation. Several studies have shown that cocaine increases endurance and the speed of recovery after bicycle riding.[12]

Coramine is primarily a respiratory center stimulant through its reflex action on the carotid body chemoreceptors. It also causes peripheral vasoconstriction by central vasomotor stimulation, but increases coronary blood flow and cardiac output in large doses. Metrazol acts at all levels of the cerebrospinal axis. Early, there is an increase in respiratory minute volume through stimulation of the medulla. The vasomotor and vagal centers are also stimulated, and reflex activity of the spinal cord is increased. Its activity also extends to the neuromuscular junction producing an increase in tension and duration of the twitch response. Peripheral action on the circulation and heart is negligible although splanchnic and cerebral vasodilatation occur due to its action on the medulla. There have been no controlled, objective work studies using coramine or metrazol.

Drugs Acting on Autonomic Effector Cells

These drugs mimic the effect of nerve stimulation on muscle or glands. Their action can be afferent and central as well as efferent and peripheral. They may stimulate or block structures innervated by adrenergic nerves, stimulate or block structures innervated by cholinergic nerves, or inhibit skeletal muscle and autonomic ganglia. Amphetamine, benzedrine and epinephrine are examples of drugs used as ergogenic aids which stimulate structures innervated by adrenergic nerves. Amphetamine differs from epinephrine in that it is also a potent central nervous system stimulant.

Amphetamine stimulates the respiratory center in the medulla, causes excitation of the brain stem reticular activating and arousal mechanisms, and facilitates mono- and polysynaptic transmission in the spinal cord. More work can be accomplished but the number of errors are not decreased, and it does not enable subjects doing exhausing work to perform longer or recover more quickly. It increases the rate and depth of respiration through its action on the respiratory center plus a dilating action on the bronchioles. Cardiac output is increased by direct myocardial action and peripheral constriction of arterioles. There is also an increase in systolic and diastolic blood pressure, although these changes are inconsistent as is the heart rate. Reports on its effect on physical performance are conflicting and apparently depend on factors such as fatigue, motivation and sustained attention.[50] Smith and Beecher[51] reported that amphetamine improved performance in a variety of athletic events and tests of strength, psychomotor and mental performance. Others[52, 53, 54, 55] found no effect on performance in essentially the same tests and athletic events. In some of these studies, it was noted that heart rate and blood pressure were increased in the resting state, and that the recovery of both were retarded after exercise.

[49b] See footnote 12.

Epinephrine also acts directly on effector cells. Some autonomic structures are stimulated while others are inhibited, and it has very little effect on the central nervous system in therapeutic doses. It has a marked vasopressor action on blood pressure, accelerates the heart rate and increases cardiac output. The arterioles of the skin, hands and feet are constricted, resulting in a decreased blood flow in these areas, although overall peripheral blood flow is increased. Oxygen consumption is increased, blood sugar and lactic acid levels are elevated, and the glycogen content of liver and muscle decreased. In both animals and humans, the use of epinephrine has failed to produce an increase in work capacity, although it may make the subjects feel more energetic.[55a]

Nicotine inhibits skeletal muscle and autonomic ganglis but exhibits complex and often unpredictable changes. It is a central nervous system stimulant for the respiratory, vasomotor and emetic centers, but a primary transient stimulant and secondary persistent depressant of all sympathetic and parasympathetic ganglia. It also manifests a curariform action on skeletal muscle in the secondary stage. Nicotine apparently has no effect on a variety of neuromuscular and cardiovascular performance tests, although Karpovich[55a] felt that performance was better in non-smokers after a two year study.

Cardiovascular Drugs

Cardiovascular drugs as well as other pharmacological substances causing peripheral vascular vasodilatation have been widely used as ergogenic aids especially in cyclists.[56] There have been few controlled studies regarding their effect on work performance in normal subjects. In patients with muscular dystrophy, however, the cardiac glycoside, digitoxin failed to increase strength, reaction time, or working capacity.[57]

Many drugs cause vasodilatation including choline esters and adrenergic or ganglionic blocking agents. There is also a miscellaneous group including nitrites, thiocyanate, veratrum alkaloids, rauwolfia, hydralazine and khellen. Most of these drugs are extremely potent, and the deaths of several athletes have been attributed to their use.[56]

Androgenic-anabolic Steroids

Thyroid, adrenal cortical drugs and insulin have also been evaluated as ergogenic aids,[57a] but the most popular drugs used at present by athletes are the androgenic-anabolic steroids. Thus far, no nonsteroid androgen has been discovered, although many derivatives of testosterone have been prepared and tested in the search for compounds that might promote general body growth without masculinizing effects. Such compounds are often called "anabolic steroids," a term which is somewhat premature since a complete dissociation between androgenic and anbolic effects has not yet been achieved.[57b]

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[50] Talland, G. A. and Quarton, G. C.: The Effects of Drugs and Familiarity on Performance in Continuous Visual Search, J. Nervous and Mental Disease, 143:266, 1966.

[51] Smith, G. M. and Beecher, H.: Amphetamine Sulfate and Athletic Performance. I. Objective Effects, J. A. M. A., 1970:542, 1959.

[52] Golding, L. and Barnard, J. R.: The Effect of d-Amphetamine Sulfate on Physical Performance, J. Sports Med. and Phys. Fitness, 3:221, 1963.

[53] Karpovich, P. V.: Effect of Amphetamine Sulfate on Athletic Performance, J. A. M. A. 170:558, 1959.

[54] Foltz, E. E., Ivy, A. C. and Barborka, C. J.: The Influence of Amphetamine Sulfate, d-Desoxyephedrine Hydrochloride and Caffeine Upon Work Output and Recovery when Rapidly Exhausting Work is done by Trained Subjects, J. Lab. and Clin. Med., 28:603, 1943.

[55] Margaria, R., Aghemo, P. and Rovelli, E.: The Effect of Some Drugs on the Maximal Capacity of Athletic Performance in Man, Int. Z. Angew. Physiol., 20:281, 1964.

[55a] See footnote 12.

[56] Soft-Pedaling the Vicious Cycle, Medical World News, Aug. 12, 1966, p. 51–53.

[57] Fowler, Jr., W. M. et al.: Ineffective Treatment of Muscular Dystrophy with an Anabolic Steroid and Other Measures, New Eng. J. Med., 272:875, 1965.

[57a] See footnote 12.

The normal function of testosterone at puberty is well known, and affects the skeleton, skin, muscles, sebaceous glands, subcutaneous fat, and speech as well as the sex organs. The role of androgens in developing muscle size and strength is based primarily on laboratory studies in animals and clinical observations in humans. In animals, skeletal muscle mass decreases following the removal of the testes or hypophysis, is restored by replacement therapy, and can be increased by excesses of androgen.[58] Dogs, trained on a treadmill, compared with those receiving testosterone showed no difference between the effect of muscle training and the androgen in histological and chemical analysis.[58a] When compared to control animals, both groups had an increase in total muscle weight, cross section of muscle fiber, number of nuclei and protein content. In humans, it is presumably the presence of androgens in increased quantities in the male that is responsible for the greater muscle mass of men. During adolescence, muscle groups such as the hip flexors, rotators and extensors and the gluteus medius attain maximal strength in the male, while performance in the female remains at a lower level.[59]

Several well controlled studies investigating the effect of androgens on strength and performance have produced conflicting results. Simonson, Kearns and Enzer [60] used methyl testosterone in males over 48 years of age with complaints of excessive fatigue and found that endurance, flicker frequency, and back muscle strength were increased. Hettinger [60a] administered testosterone to older male subjects between 65 and 70 years of age and also reported increases in strength and physical working capacity. A combination of isometric exercises and testosterone produced even greater increases in strength. Samuels, Henschel and Keys,[61] in a study of young men between 21 and 30 years of age, reported that methyl testosterone failed to increase strength. Fowler, Gardner, and Egstom [62] also were unable to show any increases in strength, motor performance, vital capacity, anthropometric measurements and physical working capacity after the use of an anabolic steroid, androstenolone, in young men. A combination of a training program and the drug also failed to change these measurements. Fowler and associates [63] also studied the effect of twelve months of androstenolone treatment, with or without therapeutic exercise, on children and adults with muscular dystrophy. There was no improvement, subjective or objective, in muscle strength and other measurements.

The difference between subjective observations and objective studies and even between well controlled experiments may be due to several factors. The type and degree of response to androgen is age dependent. Increased muscle strength occurs to a greater extent when androgen is given before puberty than when given at or after puberty. After 50, increases in strength in response to androgenic drugs again appears to occur. Before puberty, testosterone production has not yet reached a maximal peak. Although not as well documented, androgenic steroids may be more effective in increasing strength in men after 50 because testosterone levels might again be reduced. The response to androgen is also dose and time dependent. This may explain the difference between subjective statements of increases in strength and the lack of confirmation by objective studies. In the reports in the literature, only therapeutically recommended doses were used. The amounts used by athletes is usually much greater. For example, the maximum recommended dosage of Dianabol is 20 mg. a day for three months. Yet, it is not uncommon to find athletes on two to three times this amount for as long as one year.

[57b] See footnote 14.

[58] Kochakian, C. D.: Mechanisms of Androgen Actions, Lab. Invest., 8:538, 1959.

[58a] See footnote 38.

[59] Danowski, T. S.: Effect of Adrenal and Gonadol Steroids on Skeletal Muscles, Arch. Phys. Med., 47:132, 1966.

[60] Simonson, E., Kearns, W. M. and Enzer, N.: Effect of Methyltestosterone Treatment on Muscular Performance and the Central Nervous System of Older Men, J. Clin. Endocrinol. and Metab., 4:528, 1944.

[60a] See footnote 38.

[61] Samuels, L. T., Henschel, A. F., and Keys, A.: Influence of Methyltestosterone on Muscular Work and Creatine Metabolism in Normal Young Men, J. Clin. Endocrinol. and Metab., 2:649, 1942.

[62] Fowler, Jr., W. M., Gardner, G. W., and Egstrom, G. H.: Effect of an Anabolic Steroid on Physical Performance of Young Men, J. Appl. Physiol., 20:1038, 1965.

[63] See footnote 57.

There is little doubt that many athletes are currently taking these anabolic drugs. In 1966, 38 weight lifters or field event men in the Southern California area were surveyed. Fifty percent had taken or were receiving one or more of the anabolic steroids. Forty-seven percent of these had received the drug from physicians, and 47 percent were on a dose that was two to four times greater than the recommended therapeutic amount. All of the men expressed the belief that their performance had improved. Only five denied any side effects. Most of those on the drugs had been taking them for at least one year.

It must be remembered that the anabolic-androgenic steroids can also produce serious side effects. Large doses of testosterone suppress the secretion of gonadotropin, and may cause atrophy of the tubules and interstitial tissue of the testes. The growth promoting effects of androgens may also be seen in the prostate, and prostatic hypertrophy is an occasional side effect.

Methyltestosterone, methandrostenolone, nortestosterone, oxymetholone, stanozolol and norethandrolone have been reported to cause cholestatic hepatitis. Frank jaundice does not always occur, but there is usually some increase in bilirubin and transaminase with reduced elimination of bromsulphalein. The response is dose dependent and becomes a frequent complication when large amounts of androgen are taken. Even small doses of many androgens, such as methyltestosterone, are metabolized with difficulty by the liver. Large doses probably have a cumulative effect and may result in the accumulation of large amounts of the substance or its metabolite in the body. Large doses of androgens can also cause excessive erythropoiesis leading to moderate polycythemia and reticulocytosis.

Hypertrophy of the musculature in response to testosterone requires retention of nitrogen. There is also retention of potassium, sodium, phosphorus, sulfur and chloride associated with a gain in weight, which can partially be accounted for by the water held in association with the retained salts and protein. Indeed, edema is often a troublesome side effect when large doses of androgen are used.

Androgens accelerate growth in preadolescent children but may decrease the height which they would ultimately attain. The bone age increases more rapidly than the height age, since androgens accelerate the ossification and eventual fusion of epiphyseal cartilages. All of the anabolic drugs share this property. The result of such a developmental pattern will be that the ultimate height attained will not be increased and may even be decreased.

SUMMARY

Of the nutritional and physical ergogenic aids, only carbohydrates have any physiological effect on performance. Sodium chloride, of course, is a necessary supplement during vigorous physical activity in hot weather. Contrary to popular belief, there is no evidence that the requirement for vitamins may be increased during work or that it is possible to super-charge the cells of the body by providing an excess. There is also no evidence that breathing oxygen hastens recovery from fatigue or improves performance.

There are no pharmacological ergogenic aids which can be safely used. The undesirable and often dangerous side effects of using drugs far outweighs any questionable benefit. If these considerations are not convincing, the legal and ethical implications of healthy persons using a prescription drug in the quest for advantage in sport cannot be disregarded. Whether done unknowingly, tacitly, secretly, or openly, the use of ergogenic aids in sports should be unequivocally condemned.[64]

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[64] See footnote 1.

APPENDIX 12

USE OF AMPHETAMINES AND BARBITURATES AS ERGOGENIC AIDS[1]

(By Donald L. Cooper, M.D.[2])

Amphetamines and their cousins are known as peppills, bennies, wake ups, eye-openers, lid poppers, co-pilots, truck drivers, peaches, roses, hearts, cartwheels, whites, coast to coast, L.A. turnabouts, browns, footballs, greenies, bombidos, oranges, dexies, jelly-beans, A's, jellie babies, sweets, beans and uppers.

Barbiturates and near relatives are known as goof-balls, sleepers, downers, reds, red-devils, yellow jackets, rainbows, blue angels, barbs and zonks. These are the various street names used by those who may experiment with these substances.

The paradoxical nature of man and athletes continues to plague us and if history teaches us anything it seems to be that man doesn't learn much from history. The repeated attempts by numerous individuals to try to discover or locate the "magic or something extra" for some susbtance outside of their own natural abilities is ever present. The tragedy of it is that many of our fine young athletes have ended up damaged and on rare occasions even killed from these worthless foray's into the world of supposed chemical help. As early as the late 1890's a British cyclist died from an apparent usage of drugs. Unfortunately this has been repeated off and on since. In 1960 at the Rome Olympics a cyclist died from taking a vasodilating drug. In 1967 two well recognized cyclists died, one French and one British from using amphetamines. In 1968 a French soccer player died from using amphetamines. This should tell us something. I am afraid what it tells us is that even though these few deaths have occurred there may be a fair number of athletes using the substances and are more or less getting away with no serious observable medical complications.

I feel we may need to under some theory on why people seem to more and more lean to something outside of themselves for a so-called additional boost. There are some interesting new theories out and some of these are certainly worth our time to explore. As you all should realize our total society has really become a drug abusing and a drug using group of people. We are constantly bombarded from the T.V., the magazines, the radio, the newspapers and the detail men that here are chemicals that can solve our problems. These chemicals substances can quiet our stomach, calm our nerves, relieve our headaches, clear our complexions, empty our bowels, flush our kidneys, clean our sinuses, stop our halitosis and on it goes. As we listen to this day in and day out something happens to us as well as to our children, the automatic or subconscious leaning that takes place indicates to us that whenever we face a challenge, or a problem or an area we may not be very comfortable in, we should start looking for some outside chemical support. This has eroded over to athletes I am afraid, and it is here that we see so much justifiable hue and cry for purification. Whether we like it or not to some extent the athletes in their ideal form have been looked up to as that great body for fair play, fair rules, and the group that are supposedly like ivory soap—99 44/100% pure, whatever that means. Even behind all of this philosophy there is also another very difficult problem to deal with and that is the one of what is actually taking place when people do use these mind altering or chemically stimulating substances. As most of you know, man has numerous fascinating pleasure centers within his central nervous system and it seems we love to have these pleasure centers stimulated or titilated. It could be safely said that man is very basically a pleasure seeking animal and will go to many lengths to satisfy this multifaceted fundamental drive for pleasure.

When we eat a good steak, this gives us pleasure, but it has to register as pleasure somewhere within our central nervous system. When we see a beautiful sunset this registers as pleasure in our central nervous system. When we hear beautiful music this also registers as pleasure in our central nervous system. Of course one of the greatest pleasures most humans can experience is in the area of sexual pleasure. It is here where we get to some interesting theories on how the amphetamines actually work. Dr. Hardin Jones of the University of California and Dr. Thaddeus Mann of the University of Cambridge in England have independently come to a fairly consistent view of the very close relationship between recreational and pleasure using drugs actually titillating the various pleasure centers of the brain for their primary action. What happens when an athlete takes amphetamines? As you know from the various biochemical and physiological studies, the amphetamines are closely related to adrenalin, which certainly does speed up the heart beat, raise the blood pressure, increase the rate of respiration and readiness for action in a chemical state of stress. Of course the amphetamines are having other effects also. They in some way are acting in a pleasure center of the brain that does make the person feel better and to some extent may mask the normal fatigue symptoms that nature is sending to the brain. This probably explains the few tragic deaths that occur from its usage; the brain is so pleasured by the effect of the drug that it doesn't feel the signals being sent of severe physiological stress and circulatory collapse and death occurs. The point is people take drugs because they like the feeling they get. I think this is a fairly sound theory for any of our recreationally used drugs. It is probably certainly true for alcohol, because most people drink for the central nervous system effect and not for the taste. In fact I would be willing to bet that if you could remove the central nervous system effects or the mind altering and titillating effects, you would have a hard time selling much gin, rum, bourbon, vodka, scotch or any other form of alcohol.

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[1] Presented at the American Medical Association's 1971 annual conference on the Medical Aspects of Sports at New Orleans, Louisiana.

[2] Director, Oklahoma State University Hospital and Clinic, Team Physician, Oklahoma State University, Stillwater, Oklahoma, U.S. Olympic Team Physician for XIX Olympiad, Mexico City, 1968.

That isn't why we are here today, but we need to try to locate some common denominators as to why athletes and people do use drugs. One of the consistent effects of amphetamines is a titillation of these pleasure centers that Dr. Jones describes as the "pre-orgasmic" areas of pleasure. Apparently the ego pleasure center must be fairly close by. If you ask most of the people who do use amphetamines how they feel, they will tell you "great". They usually have a very unrealistic picture of themselves, almost the feeling that they can "leap tall buildings", "stop a speeding locomotive", "fly faster than a bullet" or the "superman complex". Actually as controlled test situations they usually do very little better, and in many cases do worse where concentrated thought-problem solving is involved. But even when it is pointed out to them later that their actual problem solving ability was impaired, they still relate that they actually felt much more capable. This is the paradoxical effect that is so hard to combat .It would seem that these individuals who do use drugs regularly do so because they enjoy the titillation of these pleasure centers.

In regards this "pre-orgasmic" type pleasure associated with amphetamines, most humans feel pretty ego strong at this phase of their activity and Dr. Jones describes a group of people who actually carry themselves along this "pre-orgasmic" pleasure time with amphetamines for 10 to 12 hours then shoot heroin for the "orgasmic" sensation. There is the ultimate in sexual perversion, a totally non-genital sex.

Another long time use of amphetamines has been in helping people lose weight. It is interesting to note that most researchers in the field feel that most overweight people are eating for pleasure of psychological need, or as it were, the eating "titillates" their pleasure centers. Now if you give amphetamines and the drug can titillate the pleasure centers, they don't have the need to eat to get their pleasure and you have a fairly reasonable explanaion of how the chemical helps. The danger is fairly evident here, if the person continues to enjoy the pleasure of the drug at a consistent small dosage level it isn't too long until that low dosage doesn't give as much pleasure or the individual finds he has to increase the dose to maintain the titillation effect. It is a fairly well known characteristic of amphetamines that they rapidly develop this dosage tolerance and effect problem. It is here that an athlete with other adjustment problems or a fairly rapid building tolerance to the drug can get into serious trouble. The history of the problem cases many times starts fairly innocently but the progressive philosophy now becomes: if one is good, five will be five times as good. This is certainly a grave area of concern in the way some athletes have used the rather massive and unpredictable doses of androgenic-anabolic steroids.

Unfortunately for many people once the drug route is taken to any consistent or persistent degree, it seems to become a way of life. When this does occur and when experimentation or repeated usage lasts long enough it appears to be very difficult to reverse the avenue being followed. Look at the very poor percentage of recoveries being secured in the drug users among our Vietnam soldiers as well as in our federal facilities at Louisville and Ft. Worth. Dr. Hardin Jones also has a theory on why this problem is so difficult to cure, correct or reverse. He states that after persistent and continued chemical stimulation many of the pleasure center receptors are damaged or altered to the point that even after the person goes off of the drugs, they have trouble returning to being able to register pleasure from the "natural" activities that gave them pleasure prior to drug usage. That is they can eat the steak and chew it, taste it but it doesn't register pleasure; they can hear the music but it doesn't or can't register as pleasurable; they can see the beautiful sunset but they don't feel any pleasure; they may be able to go through sexual activity but again they are unable to register much pleasure. Almost all heroin addicts are impotent; a high percentage of chronic alcoholics are impotent. In fact in Dr. Thaddeus Mann's work from England he makes the statement that "If Romeo had had hashish, he would have had no need for Juliet".

I am sure you are all familiar with the recent dismissal from the Delaware State football team of 13 players found by tests to be using drugs. The primary drug involved was amphetamines, although some did apparently test out for barbiturates. This second mentioned group of chemicals are those known as the sedatives or central nervous system depressants. Many people who get high or stimulated with amphetamines use the barbiturates to come down or to help the individual get to sleep after he comes down from the amphetamine "jag". It is not too unusual to see the same person the next time around use the amphetamines to counteract the barbiturate "handover" and away you go on a chemical merry-go-round. In athletics one of the fairly common used types of pills combines both drugs together. These have been used in combination medically for many years to help treat depressed and anxious people. Dexamyl was a widely used substance for many years and it is this combination drug of amphetamine and barbiturate that Jim Bouton is referring to in his book when he talks about the "greenies". These are apparently used by some professional athletes to help them "get up" or get ready for a contest. This combination again has the "mood-elevating" or titilation effect in those areas of pleasure in the central nervous system that can lead the person to feel more capable and at the same time reduce some of the jitters associated with the amphetamines alone.

In spite of the recent article in Look Magazine making some very accusing remarks about Stanford University and the Pacific 8 College Teams, despite what Meggasay, Scott and other disgruntled athletes are saying, I don't honestly feel anyone knows for sure how much the drug scene has gotten into athletics. Usually where there is smoke there is fire, so I do feel we have a problem and one which is probably going on in a "black-market" style or an "under the counter" type problem. As far as I am able to determine from talking with literally dozens and dozens of trainers, team physicians and coaches, there are none of the amphetamines or the amphetamine-barbiturate combinations being given through any official agent of any team. At least at the collegiate level I feel this to be very true; there are possibly some questionable areas in professional athletics, but even here from those few I have visited with, if it is a problem it is also from the "under the counter" area.

There is honest debate yet in the area of the use of a sedative on the night before a game when certain athletes do get tense, nervous, unable to sleep and would prefer a mild amount of sedation. Very few people use barbiturates, although I have heard of the short acting drugs causing very little problem when used carefully and well controlled. Many people have used such sedatives as Placidyl and Dalmane or even those antihistamines such as Benadryl and Phenergan that do have a mild sedation effect.

I personally have always felt the ideal situation for the athlete or for that matter any person was to be able to go to bed and in a fairly reasonable length of time drop off to a restful sleep. I would consider any time up to 45 minutes to an hour fairly reasonable. The opposite of this where the individual goes to bed and after two to four hours of tossing and turning finally falls into a fitful and restless type of sleep where there may be periods of wakefulness following later on to be most uncomfortable and really downright miserable. This is not an ideal-way to spend the night before an athletic event and fortunately not too many athletes have this much trouble. When they do I personally see nothing so wrong with trying to help to get this person a fairly restful night. I would do the same thing for any patient whether he be an athlete or not. As in all situations of this type I would be trying to explore the possibility of personal or emotional problems with the person and certainly keep the amount and dosage used at the minimum of chemical or drug needed to control the problem. This is really an area of grey and there may be those who feel this is not proper usage of drugs, but I suppose each has to practice medicine as he sees it from his own experience.

There is one terribly important point in regards the use of the amphetamines and the amphetamine-barbiturate combinations. That is as far as the scientific literature is concerned there is very little evidence to indicate any real help as far as performance is concerned. There is evidence in some well done studies that when all of the participants in certain events are tested, losers are more prone to dabble in the area of drug gimmicks than the winners. In Winnepeg in 1967 all of the cyclists were tested and it wasn't until they got to 7, 11, 14, 18, 20 and 32nd place finishers that they found the drugs being used. The same type of results occurred in both France and Italy in more recent testing. I feel this may be seen as strong evidence that far more losers do use drugs than winners. Even in the 1968 Olympics the spot checks were only done on the winners and this immediately creates a wrong impression. That is that somehow there is a relationship to drugs and winning. In reality there may well be a greater correlation between drug use and losing. Delaware State was certainly not setting the football world on fire this year. I personally do not believe the amphetamines or the amphetamine-barbiturate combinations can make any athlete perform better than he could drug-free. In fact, in many instances the drugs may very well be detrimental to an athletes performance.

The horse racing people have quite a merry old time with this and to the satisfaction of the general public they may have established the belief that all is well with their testing programs and all is under control. I have found very meager evidence in the literature that a horse is solving any particular problem or even in fact that horses can appreciably run faster on drugs. It is difficult to validate in the horse how much more complicated it all becomes in the case of the human being in an athletic contest. There are physicians who say they believe drugs do increase performance and are an unfair advantage. The studies are inconsistent and they have yet to show me a consistent series of reduplicated, well controlled, double-blind studies that confirm it. The dilemma is real and one that organized sport is going to have to come to tighter grips with in the not too distant future. Of course one of the very basic fundamental problems is that we do not have all the answers. Anyone gets up and starts telling you exactly what drugs will and will not do and how they do it you better be careful in accepting the presentation. An illustration of what I mean is best shown by aspirin. How many years has aspirin been under study and even to this day no one knows how an aspirin really works. There was a theory a few years ago that it worked by binding the copper ion in returning it from the extracellular space to the intracellular space in the central nervous systems cells. More recently it is felt by some to be related to the prostaglandins and their function within the body.

The truth is no one really knows for sure. The same thing could be said of digitalis; we know more or less what it can do for many decompensated hearts, but we don't know exactly how it does it. There is much to be learned, but I feel from the observation of those who have gotten heavily into the drug scene that it is certainly a dangerous route to follow. From a health standpoint and from an ethical standpoint there is nothing to recommend it. In this day and age of ecological concern, it is evident that maybe our society needs to show as much real and serious concern with internal pollution of our bodies as well as for the external pollution of our water, air, and land. To attempt to use so-called super drugs to try to create super people is first of all not likely to give a positive result and secondly can be a very dangerous course to follow.

Somehow we need to return to the concept of normalcy. Most of us were taught in medical school that our main job was to return our patients to as near normal as we could. There are no drugs that can safely make any normal person better than normal. Drugs can be lifesaving and a necessary tool in the practice of medicine but should only be used in diseased, deficient or injured states.

We may need to heed the advice of a famous physiologist when he gave the pattern to follow regarding our body and its functions: "Fill what is empty, empty what is full and scratch what itches."

APPENDIX 13

AMERICAN MEDICAL ASSOCIATION

[From Sports Medicine, March 1964]

JOINT STATEMENT OF COUNCIL ON DRUGS AND THE COMMITTEE ON THE MEDICAL ASPECTS OF SPORTS ON USE OF ANTIFATIGUE DRUGS IN ATHLETES

1. AMPHETAMINES

The following statement on the use of the amphetamines in athletes was made several years ago by the AMA ad hoc Committee on Amphetamines and Athletics:

"Since the use of any drug to improve athletic performance has already been made grounds for disqualification by the International Amateur Athletic Federation, the Amateur Athletic Union, and the United States Olympic Association as being contrary to the highest ideals of sportsmanship, and since the use of amphetamines even in moderately small doses is known in many instances to result in habituation and harmful effects, the Committee has recommended that the use of amphetamines for this purpose be condemned. Because these drugs can be obtained legally only on prescription, a serious obligation devolves on physicians to help prevent such usage by prescribing them only for well recognized medical indications."[1]

2. POTASSIUM AND MAGNESIUM ASPARTATES (SPARTASE)

The available evidence on the alleged antifatigue effects of potassium and magnesium aspartates has been evaluated by the Council on Drugs.

The summary of the Council's opinion on this agent reads as follows:

"A preparation containing potassium and magnesium aspartates is claimed to be useful in the management of the fatigue syndrome. However, since there is no precise experimental model analogous to fatigue in man, laboratory evidence of its actions cannot be directly transposed to human situation. The clinical trials do not convincingly demonstrate efficacy."[2]

A report by Lasagan, *et al.*, substantiated the opinion of the Council on Drugs. In a well-controlled, double-blind study, these investigators were unable to demonstrate any beneficial effect of the aspartates on the muscular performance or subjective well-being of a group of athletes.[3]

It is unlikely that an athlete using this mixture of aspartates would experience harmful effects; however, nausea, abdominal discomfort, and diarrhea have been noted occasionally after its use.

APPENDIX 14

FUNDAMENTALS OF ATHLETIC TRAINING—A JOINT PROJECT OF THE NATIONAL ATHLETIC TRAINERS ASSOCIATION, THE ATHLETIC INSTITUTE, AND THE MEDICAL ASPECTS OF SPORTS' COMMITTEE OF THE AMERICAN MEDICAL ASSOCIATION

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F. DRUG USE AND ABUSE

One of the most difficult problems that can face an athletic trainer is to respond effectively to an athlete who is curious about drugs. A frank discussion on the pros and cons of drugs will give the athlete the opportunity to develop attitudes that will help him understand the proper role of drugs in sports and life.

Quite a variety of definitions and solutions exist in the literature concerning what is "doping" and what is good use of drugs. Though he is neither lawyer, pharmacologist, nor physician, the athletic trainer can serve the athlete very well by providing the essentials of a drug control perspective.

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[1] Ryan, Allah J.: Use of Amphetamines in Athletics, *JAMA*, 170:562, 1959.

[2] New Drugs and Developments in Therapeutics, Council on Drugs' Statements, Potassium and Magnesium Aspartates (Spartase), *JAMA*, 183:362, 1963.

[3] Lasagna, Louis, *et al.*: Effect of Potassium and Magnesium Aspartates on Athletic Performance, *JAMA*, 185:129, 1963.

PURPOSES OF DRUGS

To use a drug, there must be justifiable purpose based on sound medical judgment. The overall justification for use of a drug is its benefit in the treatment of a clinical condition. There must be a competent decision as to the nature of the condition and then a judgment as to whether the ultimate effect of a particular drug will be beneficial.

The clinical benefits of drug administration can be categorized as cure, control, or comfort. The use of penicillin after a diagnosis of a strep infection is an illustration of curing. The use of insulin to keep a diabetic athlete healthy is an illustration of controlling. The use of aspirins and liniments illustrates comforting.

A fourth purpose can be categorized as improvement. The use of vitamins and tonics, amphetamines and anabolic steroids are illustrations. To put this in perspective, a medical diagnosis of a clinical deficiency must precede treatment if the purpose of improvement is to have clinical justification.

EFFECTS OF DRUGS

Talking about purposes of drugs is one thing; their effects are another. Drugs are potent chemicals that to be effective must markedly alter the body's processes. The degree of alternation and the particular body process which is altered are highly variable. Many factors can alter the behavior of a particular drug in a particular human body. The dosage, timing, frequency, and interaction with other drugs (such as alcohol) are examples. The medical decision to use a drug must take into consideration the potentially harmful as well as the beneficial effects on the consumer. The athlete should respect the fact that if he chooses to dabble with a drug through the black market, he may be accepting unknown serious hazards along with some dubious benefits.

CONTROLS

Laws, ethics, and education must be relied upon for the protection of the consumer from inadvertent as well as frank misuse of drugs.

Any new drugs developed for human use must first undergo a long period of testing under tightly controlled conditions. Its purpose must be declared; its effects carefully noted. Animal testing precedes human testing if a question of safety exists. Only physicians who are registered in one of the approved controlled studies can use the drug until it is released by the Food and Drug Administration as either an over-the-counter or prescription drug.

OVER-THE-COUNTER DRUGS

If a drug proves safe without the supervision of a physician, then it becomes an over-the-counter drug and can be sold without prescription. Vitamins and aspirins are in this category. Labels for over-the-counter drugs are required to list adequate warnings, however for safe use where particular hazards are known. Directions may include "Do not exceed recommended dosage. . . . Do not apply to broken skin . . . . Do not drive after taking medication."

The use of over-the-counter drugs should be limited to minor problems and then primarily for the purpose of comfort in the sense of giving relief from nuisance aches and pains. The prime hazard of over-the-counter drugs is not from the drugs but from the consumer's diagnosis. Used according to directions, the drugs are usually safe. But by indiscriminate reliance on these drugs everytime something seems wrong, effective treatment for a significant problem may be delayed. A minor hazard is the vast amount of money wasted on unnecessary over-the-counter drugs.

PRESCRIPTION DRUGS

Other drugs are found through testing not to be safe for self-medication because they are habit-forming or because their potential adverse effects require careful medical management. If beneficial effects have been demonstrated with appropriate controls, they are introduced for use as prescription drugs. These can be dispensed only after a physician prescribes them for his patients and for clinical purposes. The law and the ethics of the medical and pharmaceutical professions are quite specific on this point.

DOPING

The athletic trainer and team physician are expected to have a number of items at their disposal, respectively, that would qualify as drugs. The use and influence of such drugs are frequently discussed in the debate on doping.

Although doping first emerged as a drugging procedure to impair performance (of a horse), it is now understood to mean the attempt to enhance performance beyond one's normal capabilities. *It has yet to be proved that any drugs reliably cause such an effect.* However, as long as the athlete feels that his opponent has an advantage by taking a drug, he is tempted to partake as well. The problem of doping can be approached best by reducing its essentials to a reasonable definition of conduct: *Doping is the use of a prescription drug for other than clinically-justified purposes.*

By limiting his discussion of doping to prescription drugs, the athletic trainer does not have to confuse the less potent drugs with those allegedly giving unfair advantage. Further, the athletic trainer defines his and the athlete's role clearly; only a physician can provide such a drug to the athletes. Finally, by limiting the use of drugs to clinically-justified purposes, the ethics of both sports and medicine are upheld.

AMPHETAMINES

The most common drugs associated with doping in sports are the amphetamines (pep pills). Their action is as a stimulant to the central nervous system; their potential effects include decreased appetite and prolonged alertness. Studies and analysis have indicated the action of amphetamines is not a decrease of fatigue but an improvement of sustained attention. In order to improve performance reliably, three elements were found to be required:

An existing sustained attention to the task.
Habituation to the task.
Habituation to the drug.

Consequently, to arrive at any benefit with any reliability, the hazards of habituation must be added to the obvious concern about extending oneself beyond a normal level of fatigue, while under the effect of the drug. Habituation to amphetamines can lead to problems of isomnia, headache, acute anxiety states, and circulatory collapse.

Further research on the amphetamines also indicates that a person's judgment can be impaired, in the sense that he overestimates significantly the beneficial effect of the drug on his performance. This fact underlies the common impression among amphetamine users that the drug is helpful, an impression that interferes with educational programs against such use.

ANDROGENIC-ANABOLIC STEROIDS

The androgenic steroids, so named because they resemble chemically and functionally the male sex hormones, are being taken by some athletes with the intent of gaining weight for sports in which weight is considered an advantage. These drugs are categorically condemned for the athlete. Their hazards—although more subtle than those associated with pep pills—are as serious.

Male (androgenic) hormones are produced primarily by the testes; testosterone is the principal androgen. The androgenic-anabolic steroids may lead to increased weight; such is the anabolic effect. However, this is usually due to increased appetite or water retention in the normal male.

Anabolism being the conversion of food within the cell, the clinical purpose of these steroids is in the treatment of some anemias, osteoporosis of bone, and chronic debilitating illness as well as male hormone deficiences. Small doses are claimed to bring about weight increases in underweight children and to accelerate growth in some children with growth retardation. However, even under clinically justified conditions and close medical management, these drugs are used only under highly selective circumstances. For example, prolonged administration of all the oral androgenic-anabolic steroids impairs liver function.

While the college-age athlete is the focus of the debate on experimentation with these drugs, it must be understood that there would be differences in the effects and hazards of the drugs on prepubertal, pubertal, and postpubertal males. This is a serious fact because the young athlete is noted for trying to emulate his older counterpart.

Puberty is generally considered to correspond with the onset of spermatogenesis and a sudden spurt in linear growth, usually at the junior high or early high school level. *Prepubertal* boys receiving the steroids, therefore, definitely risk decreased ultimate height because of premature stopping of a long bone growth. In addition, virilization of the boy in this age group occurs frequently even at recommended dosages in clinical justified use.

In the pubertal male where the growth spurt is spontaneous and essentially maximal, the administration of these drugs has a doubtful effect on growth. But steroid-produced suppression of testosterone production by the developing testes is a disturbing finding.

For the adult or *postpubertal athlete*, the growth and development factors no longer apply. This population may consider the side effect of the drugs to which they are vulnerable—a decreased libido—sufficiently inhibitory. Testicular size and function evidently reverts to the prepubertal stage during extended administration of these steroids.

For those who are not impressed even by these effects, a recently completed controlled study revealed no significant differences between subjects who received an anabolic steroid and those who receive a placebo, with respect to strength, motor performance, work capacity, and other measurements taken. Consequently, all the risks are taken for nothing.

It should be noted that the above warnings are based on evidence compiled from the use of the drugs under medically supervised conditions and *where clinical deficiencies had been diagnosed, giving purpose to the use of the drugs.* It should be obvious then that where the consumer is a healthy male without deficiencies significant new problems are posed by taking the drug.

WEIGH THE RISKS BEFORE EXPERIMENTING

There are many reasons for individuals abusing drugs: for peer acceptance, desire to experiment, attempt to feel mature, to rebel against authority, to escape from reality, because of need to rely on something other than self. It is difficult to rationalize any of these reasons as legitimate.

An additional reason for drug abuse by athletes is to improve performance. It starts with this purpose but soon the athlete develops psychological dependence on the drug. He cannot play without it.

Apart from the physical, legal and good sportsmanship considerations that such abuse leads to, poor behavior patterns are established that may effect the future course of the athlete's life. He will then go to the next state of abuse by reasoning that he will stop once his athletic career is finished. However, he has already established behavior patterns that will be very difficult to alter. When he feels pressure during adult years there will always be a psychological crutch within easy reach—just one to relax him before delivering a speech or entertaining guests.

An athlete takes up a sport because he wants the challenge of matching his talent against that of an opponent or the satisfaction in performing a difficult skill well. When a player takes drugs he is admitting that his own innate talent is not enough. Drugs do not benefit the athlete in the short run of his athletic career and in the long run he has developed a losing attitude. Playing and performing with pride of natural abilities seems to be the proper attitude to instill—an attitude the athletic trainer is able to reinforce during his personal contact with athletes.

NOTE.—For further information on drugs, students can write for the following pamphlet: *The Crutch that Cripples—Drug Dependence*, American Medical Association, Department of Health Education, 535 North Dearborn Street, Chicago, Illinois 60610. Students can also phone (527-1500) or write The Department of Health Education of the American Medical Association for answers to specific questions.

APPENDIX 15

The Use and Misuse of Drugs in Sports–Statement of the National Athletic Trainers Association

(Issued January 20, 1971)

Under authority of, and by direction of, the Board of Directors of the National Athletic Trainers Association (NATA), the following statement of policy is issued:

The question of use and misuse of drugs in sports has received and undoubtedly will continue to receive considerable public attention and journalistic treatment. Since the role of the Athletic Trainer falls within this question, the National Athletic Trainers Association desires to emphasize its complete condemnation of the use of ergogenic aids—particularly stimulants, depressants, and anabolic steroids—in attempts to gain advantage in sports performances.

The misue and abuse of drugs by an athlete not only presents to him potentially significant hazards, for dubious gains—it also raises a cloud of controversy over legitimate and constructive use of medications and drugs in athletics. It further produces, especially among the emulating public, misconceptions instead of insights into sports—demonstrated principles of healthful living. There is no place in athletics for the substitution of drugs for hard work and the healthy habits of proper rest and proper diet.

The NATA reaffirms its stand that it will cooperate with all agencies and organizations who are attempting, through research, to develop techniques of monitoring athletes in competition. Hopefully this will not become a necessity. We feel that accurate, meaningful education of athletes and their leaders, relying on ethical instead of legal conduct for controls, is a much better objective and more realistic solution to the problem. To this end, the NATA has utilized various means available to it as an organization:

In 1962, NATA endorsed the AMA's Bill of Rights for the Athlete, which is anchored on responsible health supervision of athletics. The NATA maintains active representation on the Joint Commission on Competitive Safeguards and Medical Aspects of Sports, which recommends rule changes and additions concerning the health and safety of the high school and collegiate athlete.

The NATA currently is co-sponsoring with the AMA and the Athletic Institute a manual on the fundamentals of athletic training, which is designed to help personnel in schools presently unable to obtain the services of a Certified Athletic Trainer.

The NATA Committee on Ethics has the function and duty to investigate any reported violation of ethical practices by an athletic trainer, which includes provision or use of drugs other than those required for therapeutic treatment and administered by or under the supervision of a physician. Any athletic trainer found guilty of violating these ethical practices will be subject to expulsion from the NATA and whatever further action the law provides.

The athletic trainer has been commended by the American Medical Association (House of Delegates Resolution, 1967) for his strategic professional role in protecting and promoting the health of active youth. The NATA re-pleges its ongoing professional preparation, continuing education, and cooperative liaison programs for serving this role effectively, with particular attention to drug education.

APPENDIX 16

[From Today's Health, October 1970]

HIGH-SCHOOL SPORTS FLUNK THE "SALIVA TEST"

(By Theodore Irwin)

It happened shortly after a football game last fall. In the dressing room, a huge lineman, befuddled and jittery, was mumbling incoherently, irritably pushing aside his teammates as he walked to his locker. No, he had not been injured. He had taken some pep pills before the game and then a few more during half-time. A reporter who tried to interview the player had to give up. "That guy was so high on bennies," the sportswriter said later, "he was practically flipped out of his senses."

This was a professional athlete. But signs point to drugs in high-school and college sports. It's well known by now that the general school population is exposed to both the "soft" (psychologically habituating) and the "hard" (physically addictive) drugs. Now even the young sports world appears to be victimized by the drug menace. Parents who feel thankful that their athletic offspring are "not smoking pot—or worse" have cause for concern. Casual and promiscuous "doping" of athletes is turning into one of the hottest controversies in sports today. The impact on youth is especially disturbing.

Traditionally, high-school athletes are inclined to emulate the pros. They imitate baseball stances of the big-leaguers and ask for their idol's jersey number. When they hear that a celebrated sports figure relies on a drug to boost performance, younger athletes are tempted. If a certain drug is good enough for their idol, they believe, shouldn't it be good enough for them?

Testimony on the phenomenon emerges from a variety of reliable sources close to school sports.

"To me," says Dr. Martin Blazine, University of California (Los Angeles) team physician, "the high-school athlete is our greatest concern. Drug abuse has spread to athletes as young as 14 and 15."

Al Silverman, the editor of *Sport*, remarks: "We get reports that 'turning on' with bennies (Benzedrine, an amphetamine) is common among high-school athletes. It's more far-reaching than most people realize, especially in Texas and Pennsylvania, where high-school sports are big."

Robert J. Murphy, Ohio State team physician, has received a number of calls from schoolboys, and their parents, inquiring about the safety of "diet pills" (really amphetamines, which suppress appetite) for athletes. "The biggest problem," Doctor Murphy told TODAY'S HEALTH, "are the kids who hear about drugs that improve performance. If one superb athlete takes a drug, word of it often brushfires through the world of sports."

Dr. Daniel F. Hanley, director of health services at Bowdoin College in Maine and chief physician at three recent Olympics, similarly tells of letters from parents of high-school athletes asking if their son should take pills recommended by the coach.

In California, the state superintendent of public instruction has been getting "distressing reports about athletes being pepped up or calmed down by drugs."

For a research project, a California college football player questioned his teammates about drugs. He learned that 48 percent of the players acknowledged having taken pep pills at one time or another.

Just how prevalent are chemical crutches among amateur and professional athletes? Since the drugs are generally bootlegged, and athletes usually take them surreptitiously, players are unlikely to brag about it. However, candid observations by prominent athletes, sports authorities, and team doctors point up the troubling trend.

Consider the eye-witness statements by O. J. Simpson, Heisman Trophy winner at the University of Southern California and now star back of the Buffalo Bills: "I don't care what anybody says, in football there are players on just about everything. I've seen them taking bennies and stuff like that to get up for a game."

On one occasion, Dr. James A. Nicholas, veteran team physician for the New York Jets, was called to treat a rookie: "He had taken six bennies. "He was in a coma and suffering from convulsions, and his blood pressure had soared to a dangerous level."

Amphetamines, he adds, are a problem all over the country. "We've stopped dispensing them under any circumstances, but I've seen them used in many parts of the country."

Besides football, big-league baseball also seems to have been invaded by the amphetamine phenomenon. Listen to Jim Bouton, former Yankee pitcher, as he sounds off in his bestseller, Ball Four:

"A lot of players need greenies just to get their hearts to start beating. Greenies are pep pills—dextroamphetamine sulfate. These players couldn't function without them." Bouton suggests that more than half of major league ballplayers take amphetamines. One player received a supply of 500 pills that was expected to last about a month. If a club's policy is opposed to the practice, players get the pep pills from other teams or from friends who know of a source.

If big-league baseball players use pep pills "they are doing it on their own," says Dr. Jacob Suker, a Northwestern University Medical School professor who doubles as physician to the Chicago Cubs.

"I don't think drugs are a problem to our ball club," says Doctor Suker. "I doubt if there's any trainer in the league who would dispense them."

Apparently sources are readily accessible. This has been pointed out by Kenneth S. Clarke, Ph.D., former staff coordinator of the AMA Committee on the Medical Aspects of Sports:

"A black market availability of doping drugs unquestionably exists. A market does not exist where there are no consumers."

An officer of the National Institute of Mental Health, testifying before a Congressional Subcommittee, said that about eight billion pep pills a year were manufactured—enough to give every man, woman, and child in the nation 35 substantial doses.

At the annual convention of the AMA last June, Doctor Murphy, the Ohio State team physician, categorized the most frequently used drugs in sports according to their value and potential harm. Heading his list of "Not Recommended" drugs in sports are the amphetamines.

When prescribed by a doctor for legitimate reasons, amphetamines act to stimulate the central nervous system, lessening the sense of fatigue, constricting blood vessels, and curbing appetite. It's doubtful whether the drug is effective as a "magic potion" to help athletes win.

Amphetamines can be highly toxic if enough pills are consumed. The drug is particularly dangerous for athletes because it artifically heightens the strain on various physiologic systems, those that are already under special stress because of exertion.

The harm can be serious, especially if an athlete's feeling of exhaustion is masked, so dulled by the drug that he overextends himself, prolonging the period of strain. This happened three years ago to a British cyclist who literally rode himself to death during a race. The following year, an 18-year-old French soccer player who died after a game was found on autopsy to have been heavily doped with pep pills. In other sports fatalities, amphetamines have been considered a contributory factor.

At the Harvard Medical School, experiments involving athletes by Drs. Gene M. Smith and Henry K. Beecher showed that amphetamines made them "cocky and self-confident." Further, statistically the drugs seemed to reinforce their abilities. Such tests, however, are hard to assess, since motivation and varying day-to-day performance must be considered.

Later research at Kent State University failed to find any enhancement of performance in either trained or untrained athletes on pep pills. A few years ago, other researchers at Harvard concluded that amphetamines "appear to improve sustained attention rather than merely to mitigate fatigue effects" and they "do not speed up receptor or motor processes."

Pep pills are but one class of dubious chemical props for wold-be winners. They are part of a group called "additive" or ergogenic aids. Another set of drugs which the AMA has found "creeping into the sports setting" are anabolic steroids, presumably used by athletes to develop muscle and add weight.

Chemically and in function, anabolic steroids are similar to male sex hormones. When prescribed by a doctor for justifiable reasons, they are useful in treating certain anemic conditions, chronic debilitating illnesses, male hormone deficiencies, and osteoporosis (abnormal porousness of bone). They are also often valuable to weakened elderly patients and patients recovering after surgery.

Surprisingly, this drug is appealing to healthy young athletes. When 38 track-and-field athletes and weight lifters at UCLA were surveyed, it was discovered that fully half of them had taken, or were taking, one or more of the anabolic steroid pills. Many of them took doses two to four times greater than the therapeutic amount that would normally be prescribed by a physician.

Doctor Nicholas of the New York Jets, who has never prescribed them, contends that anabolic steroids have been endorsed by several coaches in swimming and track-and-field events. The practice has taken hold particularly on the West Coast.

High-school basketball players have been reported to use these steroids in attempts to gain height.

Veteran athletes, too, go for the alleged body-builders. One American discus champion has bluntly stated that at Olympic Games so many competitors take anabolic steroids that younger men "have no choice if they want to stay on top."

Do these drugs actually boost athletic ability? Dr. William J. Fowler and colleagues at UCLA measured the performance of a group of athletes, about half on anabolic steroids, the rest on placebos. After four months, the investigators concluded there was "no evidence that the anabolic steroid increased strength, motor performance, or physical working capacity in young men."

Any drug potent enough to alter the body's metabolism is sufficiently powerful to have undesirable effects. When a healthy young athlete takes the steroids for a long period, he runs the risk of liver damage, edema (water retention), and a change in sex drive. If young boys take the drug, premature virilization can occur and long bone growth may stop prematurely. They can end up with a height lower than they would normally have attained.

"There is no excuse," the Committee on the Medical Aspects of Sports declares, for giving these drugs to healthy athletes of any age."

Vitamines are also misused. Large doses are regarded by many athletes as bodybuilders and as a means of preventing muscle pulls, cramps, and general exhaustion. These are highly questionable notions.

Professional football players are among the most devout believers in the miraculous merits of B–12 and other vitamins. Jerry Kramer, formerly a Green Bay Packer guard, tells of teammates running into the training room and "grabbing handfuls of vitamin pills and wheat germ pills . . ."

Vitamin injections are common. Mickey Mantle once received a vitamin shot from an unsterile needle that resulted in ableeding abscess on his hip. As a result he almost missed a World Series.

Unfortunately, the vitamin craze is mounting in colleges and high schools, according to Doctor Hanley, the team physician at Bowdoin College. "They are considered as a kind of replenishing fluid," he says, "and it makes no sense."

At least one U.S. team doctor at the 1968 Olympics was shocked at the drug scene he witnessed there. "I saw athletes," Dr. Thomas F. Waddell relates, "consuming as many as 10,000 milligrams of vitamin C in one day. An hour before they were to compete, others were getting injections of 1000 milligrams of vitamin B–12."

Evidently it's all in vain. As Doctor Waddell points out, the beneficial effects of vitamins have not been proved with doses above the minimal daily requirements. Studies at the U.S. Army Nutrition Laboratory in Denver suggest that vitamin supplements above the normal requirements do not improve muscular endurance. The AMA also cautions that vitamins can cause harm in some cases and that they cannot improve athletic performance in any way.

Claims have been made that wheat germ oil produces "astonishing" improvement in runners, swimmers, and wrestlers. But when researchers in Palo Alto, California, tested cross-country runners with wheat germ oil, the effect was "not statistically significant or associated with any systematic change in physical performance."

Among the latest ergogenic aids is caffeine, for its stimulating impact. Athletes have taken as much as 250 milligrams, by mouth or injection. Thus far, caffeine has not been banned as a form of "dope." Still other drugs turned up at the Olympics in Mexico. As Prof. L. Prokop, vice president of the International Federation of Sports Medicine, observes:

"The trend is to somewhat less harmful substances—ephedrine and certain analeptics (restoratives). They are, however, administered in such large quantities that they could cause real medical problems."

Just who are the athletes tempted by dope? Doctor Murphy of Ohio State believes they are the "kooks," particularly in individual sports like running, cycling, and swimming, where athletes work against the clock. Amphetamines and vitamins are used more or less in virtually every sport, from boxing to auto racing. The body-building hormones generally attract football players, wrestlers, shot-putters, discus-throwers, and others anxious for bulk and power.

Behind the doping trend are several contributing elements. One is the fact that we are in a pill-popping society where taking medications has become matter of course. Little wonder. Not only is this the era of wonder drugs, but the praises of patent medicines are rammed down our throats by countless white-coated hucksters on TV.

Another major factor is the winning-isn't-everything-it's-the-only-thing philosophy that dominates sports today. In professional sports, O. J. Simpson puts it this way: "The owners are paying you so much money, if you don't produce they just don't need you." So athletes are tempted to try any kind of shortcut. And often coaches who know better are intimidated by the popularity of sports figures.

A group of drugs called "restoratives" is also apt to be resorted to as chemical crutches. These often-controversial drugs are intended, after an injury, to provide immediate relief and to restore a player, at least partly, to his normal prowess. Among them are painkillers, muscle relaxants, and anti-inflammatory compounds.

Quite frequently an injured football player is injected with cortisone or a local anesthetic, then sent back into the game. This happened, for example, in the 1969 Sugar Bowl when Arkansas quarterback Bill Montgomery was given a needleful of painkiller for a shoulder injury and returned to complete 11 passes and beat Georgia. Pitcher Denny McLain of the Detroit Tigers received an anti-inflammatory drug in his throwing shoulder during the 1968 World Series and went on to win his only game of the series.

These athletes take serious risks. Alluding to the hazards in the promiscuous use of restorative drugs, Dr. Gary Buterbaugh of the University of Maryland School of Pharmacy comments:

"Continuous use of procaine hydrochloride (a painkiller), for example, can produce side effects ranging from excitation to coma to convulsions, as well as allergic reactions. Use of anti-inflammatory compounds such as cortisone and phenylbutazone is also not without danger. The inflammation is relieved but not the cause. Use of a joint may accelerate cartilage deterioration. Cortisone can lead to the gradual degeneration of bone structure.

"Thus the continued use of cortisone to relieve pain and swelling in a pitcher's elbow while he continues to pitch may lead to degeneration of the elbow with crippling results. The same applies to the fullback's knee."

When the damage is aggravated, an athlete may wind up with traumatic arthritis in later years. Joe Namath was allowed to play in college despite his bad knees and today he is already afflicted with arthritis in both knees. Sandy Koufax could not have continued pitching without an anti-inflammatory drug. "I had to drag my arm out of bed like a log," he recalls. An arthritic change took place, and despite crash treatment with cortisone and various pills he finally had to quit.

Athletes also ask for antispasmodics and tranquilizers to control pre-game nausea and jitters. Many of these drugs, particularly the antispasmodics, contain ingredients that may cause blurred vision, which can be dangerous in such sports as baseball and football.

What it all comes down to is the *judicious* use of medications in sports. Doctor Hanley, the Olympics physician, maintains that an athlete with asthma, for instance, is entitled the bronchial dilator, although such drugs are banned in international competition. A runner suffering from leg cramps could benefit from quinine sulfate, also prohibited in the Olympics without special permission.

As for ergogenic aids, Doctor Hanley firmly declares: "There is nothing known that really consistently improves performance over a period of time. It ain't necessarily so that winning is connected with doping."

With restorative drugs, Dr. Andrew Patterson, who doctors the New York Knicks basketball team, holds that each injury has to be evaluated on its own. "The physician," he says, "must decide whether removing the pain factor might lead to serious additional injury."

Virtually all team doctors will assure you that the health of the athlete must come ahead of winning. But it's difficult to determine how often this precept is breached under pressure from a star player, prestigious coach, or club owner.

"If the injury is serious enough to warrant the use of drugs," Doctor Buterbaugh stresses, "the athlete should not be allowed to compete until the problem is solved."

In his "judicious" policy for the pros, the Jets' Doctor Nicholas sees the problems this way: Paid for their work, pros want to play despite acute pain. If a substitute can do as well as a hurt player, the injured man should be kept out. "A good healthy replacement is better than a player whose leg is gimpy."

In school sports, the team doctor has a responsibility to the athlete, his parents, and the team. "A physician," says Doctor Nicholas, "has a duty to the boy to allow him to develop to maximum ability in his sport. So it's a disservice to blanket him out when he can play. Yet the doctor must protect the child from injury. This is a matter of medical judgment."

What can be done to combat or control doping in sports? France, Austria, and Italy have passed laws against it. Urine tests have been conducted at several Olympic Games. But the procedures are complex and very expensive. Proving the presence of anabolic steroids is a formidable job, as it is to distinguish between normal and excessive use of caffeine. And athletes have been known to outwit the testers by submitting a bottled urine specimen taken before popping their pills.

The American Athletic Union, U.S. Olympic Association, and the International Amateur Athletic Federation have already outlawed amphetamines or any other "doping" drug in sports. But perhaps because it's hard to define "doping," and enforcement would turn out to be a huge headache, none of the professional leagues in this country has yet taken an official stand.

What is needed, all medical sports authorities agree, is mass education on the perils of drug abuse and misuse. For school athletes particularly, the AMA Committee on the Medical Aspects of Sports advises:

"For top performance in sports, there's no artificial substitute for good coaching, thorough conditioning, many hours of practice, and general good health. These can't be obtained from a bottle or a box."

APPENDIX 17

[From Maryland State Medical Journal, August 1970]

THE USE OF DRUGS IN ATHLETICS

(By William J. Kinnard, Jr., Ph. D., Dean, University of Maryland, School of Pharmacy)

A major problem today is drug abuse among young people. In athletics, many different drugs have been used in the past and are now being used to enhance an athlete's performance and to hasten his recovery. We, as adults, must help them develop the respect for drugs that can only come from their judicious use. Let's be sure that we are working with the "natural" athlete and not one who, through the excessive use of drugs, is forced to perform at a level far past his normal limitations.

We have gone through the stone age and the iron age, and through ages of conquest and war. While today's times can be given many labels, one which certainly applies is "the drug age". It began approximately in 1950 and has lasted 20 years. While it is true that many drugs were available for centuries before this age, it wasn't until the 1950's that such a vast number of drug products became available. These included new, more specific therapies and older products made more effective and less toxic. A professional and public confidence in the effectiveness of these drugs soon developed, a confidence based on the idea that these drugs were almost totally specific and nontoxic in their actions.

We unfortunately developed an overconfidence in the use of these agents and, with this, an often indiscriminate and uncautious approach to the prescribing and taking of drugs. This led to drug misuse and the problem of drug abuse that we see today. The casual use of drugs by often well-meaning adults has helped to set the proper conditions that trigger the widespread drug abuse problem. One can attempt to place the blame for our problems on many people, and even on society as a whole. But the time is past where we can afford to continue looking for someone to blame, when instead we should begin to tighten the manner in which we use drugs.

This does not imply increased legislation and longer jail sentences. This is not an answer. We must turn to a more discerning use of these agents. This could and should mean that fewer drugs will be taken.

Each of us must take a greater responsibility in our own use of drugs, each of us as a patient—whether we prescribe for ourselves or take medicine prescribed by a physician or dentist—each of us involved in the control of drug distribution, each of us as a parent or neighbor. This responsibility becomes extremely important when one is dealing with young people, not only because of the problems that involve drug abuse, but also because of the fact that drugs may elicit unwanted or adverse reactions in young, developing adolescents.

How can we use drugs more judiciously? The first thing is to recognize that many drugs are toxic, not only in high doses, but even in doses used therapeutically. Tunnel vision in the use of drugs cannot be allowed to continue. Drugs should only be used when a clear therapeutic indication exists, and not to unnecessarily alter the normal physiological processes.

Many different drugs have been used to enhance an athlete's performance and hasten his recovery. *Sports Illustrated* recently discussed some of the less than ethical practices used by a few physicians, trainers, or coaches. Why is it wrong to use some of these drugs as these people did or are still doing? The lack of morality is argument enough against this, but the adverse reactions that may occur are also a strong reason not to follow this line of misguided therapy. What are some of these reactions?

The amphetamines have been used to enhance athletic ability and reduce fatigue, but central nervous system stimulation is not the only pharmacologic effect caused by these drugs. They will also increase the heart rate, raise blood pressure, suppress appetite, slow intestinal contractility, etc. The initial stimulatory effect is followed all to often by depression and a heightened sense of fatigue. They have a high potential for abuse and one of the derivatives, methamphetamine (speed), will soon be singled out for strict control under the new federal laws.

The use of anabolic steroids to hasten recovery of muscle damage or to enhance muscular development has no place in athletice. These drugs are chemical derivatives of testosterone, the male sex hormone and, while they do not have as potent an androgenic effect as the parent drug, they can still exert a similar effect. High doses of these drugs actually suppress testicular activity, and may reduce the final height achieved by the boy.

The use of pretolytic enzymes to treat inflammation or reduce edema in traumatic injuries can be dangerous. These enzymes are nonspecific and will also break down the normal barrier the body builds around an infection and allow it to spread.

Vitamin B_{12} has little rationale for use in athletics unless the athlete has pernicious anemia. In a well balanced diet that most trainin gtables are supposed to provide, there is no need for supplemental vitamins of any kind.

Ethics are a necessary part of our society. They are even more important in dealing with competitive events involving athletes that are developing in mind as well as body. It becomes important to restrict the use of drugs to only clearly indicated conditions. This will hopefully foster a respect for drugs by these athletes who are quite often school leaders. To aid in the restriction of the use of these drugs, each group involved in the coaching, conditioning, or treating of athletes should have a well-defined policy concerning their use of drugs. The policy that follows, adopted by the Santa Clara Medical Society in California, is an example of such an ethical code.

The following policy statement regarding the use of potentially hazardous drugs by athletes to artificially improve their performance, was unanimously adopted by the Council of the Santa Clara County Medical Society at their March 3, 1969 meeting:

1. In the words of the International Amateur Athletic Federation: "no agent which stimulates muscle and nerves, or paralyzes the sense of fatigue or is habit forming should be used by any athlete".

2. To be more specific, as stated by the National Federation of State High School Athletic Associations, and the Committee on Medical Aspects of Sports of the American Medical Association, "whether done unknowingly, tacitly, secretly or openly, the use of unwarranted ergogenic aids in sports is to be unequovically condemned". The definition of ergogenic aids is "those drugs used to increase the capacity of bodily and mental effort especially by eliminating fatigue symptoms". Under this broad category especially the anabolic-androgenic steroids and amphetamines should be singled out for condemnation.

3. There is no excuse for giving anabolic-androgenic steroids to healthy athletes of any age and especially adolescents. The ill effects of the anabolic-androgenic steroids such as decreasing ultimate height, virilization, precocious puberty, testicular atrophy, decreased libido and liver function changes are insidious and are not immediately apparent.

4. Speaking on the amphetamines, these are the most widely abused nonnarcotic drugs and when used to push the athlete beyond his normal endurance level can be harmful and even fatal, not to mention the problem of dependence and ultimate psychosis that is all too prevalent a complication lately. There is also no place for the use of amphetamines in a well conditioned athlete under the guise of being an appetite suppressant. No person in competitive athletics should be taking any amphetamines for therapy of any condition while he is competing. If the condition is such as to warrant their use then this condition should disqualify the participant from the athletic program.

5. There is no conclusive evidence that nutritional ergogenic aids such as food and vitamin supplements or oxygen have a place in a training program for normally nourished, well conditioned, healthy athletes.

6. The available evidence indicates that the usefulness of oral or intramuscular enzymes has not been established.

APPENDIX 18

[From the Christian Century, Apr. 5, 1972]

THE USE OF DRUGS IN SPORTS: AN ETHICAL PERSPECTIVE

(Interview conducted by Robert J. Bueter)

Tom Manforti is a health instructor and trainer of athletic teams at Loyola Academy (Wilmette, Ill.). A graduate of DePaul Academy and DePaul University, he served his apprenticeship as a trainer at these schools before becoming their head trainer in 1950, a post he held until 1969. He also worked as an assistant trainer for the Chicago Cardinals of the National Football League and as head trainer for the Chicago Packers of the National Basketball Association.

Tom Powers, a graduate of Notre Dame University, is director of the physical education program of Loyola Academy where he has coached football since 1964. Before coming to Loyola Academy, he coached at Notre Dame under Frank Leahy and Terry Brennan and at two other high schools in the Chicago area. Tom has served three times as president of the Chicago Catholic League Coaches Association, which named him its "Man of the Year" in 1971.

Fr. John J. O'Callaghan, S.J., is professor of moral theology at Bellarmine School of Theology in Chicago, Besides publishing in such journals as Theology Digest *and* Chicago Studies, *Fr. O'Callaghan has taught and lectured widely, conducting institutes in moral theology in places ranging from Jamaica, West Indies, to Covington, Kentucky.*

Interviewer: So many drugs are talked about these days, Tom, that I hardly know where to begin this discussion of drug abuse in sports. Can we group these drugs and then raise concrete issues about the clinical use of the drugs in each group?

Tom Monforti: We could agree on two groups of drugs: first, those we could call restorative; that is, those that restore the use of a part of the body that would otherwise be incapacitated. Second, those we could call additive; that is, drugs that add an extra dimension of performance over and above the individual's native abilities. The key ethical issues would arise in the first group with the use of pain killers and in the second group with the use of amphetamines and anabolic steroids.

Int.: What are the ethical issues with regard to pain killers?

T.M.: Pain killers can be abused in a situation where a football player, say, has an injured elbow or ankle. A shot of novocain or procain or zylocain would be used to prevent his feeling pain, the limb in question would be taped, and the player would participate in the game as if nothing were the matter. I have heard of instances in professional football where an individual, playing in subzero weather, hurt his hand badly; but his hand was injected, and since he couldn't feel the cold he sustained severe frostbite and almost lost the fingers. I think such practices are very hazardous and should not be allowed. I have never heard of such a thing's happening in high school games, and only occasionally in college, but I think it should be condemned wherever it occurs.

I

Int.: Are there any circumstances under which you would think it right to use a pain killer?

T.M.: Yes, I would approve of the therapeutic use of these drugs. Let us say that a person has a stiff knee or a stiff hand, and we know that by anesthetizing it and then having him use it under strict therapeutic conditions, we can shorten the time of recovery. This is proper. But it should never be done to allow the victim to participate in a game or practice session, because there is always danger that the knee or hand will be irreparably damaged. There is real danger here.

Fr. O'Callaghan: I have no personal experience in this area at all, but I have read chapter and verse accounts of abuses like those Tom has mentioned, so I have no doubt that this sort of thing does go on, even in high school and college. The question at issue is the set of values which will determine whether you can do this or not.

T.M.: Well, I have been with high school, college and pro athletics for 23 years, and I can tell you that I for one have never injected—nor have I ever seen a doctor inject—a ballplayer with a pain killer to let him carry on in the game.

Int.: As a case in point, how would you evaluate the shots given to the famous Sandy Koufax elbow? [Koufax, a star pitcher with the Los Angeles Dodgers, had an arthritic elbow that required constant treatment and eventually forced his retirement at the height of his career.]

T.M.: Cortisone was the drug used there, and it's commonly used with novocain or a similar drug. This is a legitimate treatment, and it is often given nonathletes for such things as bursitis and arthritis. These drugs can break the pan cycle and enable a player to perform—but he should never play while still under the immediate influence of the drug. I recommend its use many hours prior to the contest—I see nothing wrong with that at all.

Int.: In point of fact, then, Koufax was receiving the shots in advance of participating, not just before the game or between innings or something like that.

T.M.: Exactly.

F.O.: So what you are saying, Tom, is that you see no difficulty with the strictly therapeutic use of drugs.

T.M.: Definitely. This is a standard treatment, say of bursitis of the shoulder or elbow, and it is used not only to mask pain but actually to heal the individual.

II

Int.: Fr. O'Callaghan, do you see any broad principles beyond Tom's rather personal statement?

F.O.: Well, I think the principle comes out of what Tom was just saying; namely, that such treatment is therapeutic. We have a moral obligation to take care of our bodies and preserve our health, and treatments which accomplish that purpose are right and good. But Tom has raised a second point; namely, that the use of these drugs in situations such as he has described may cause further harm to the individual. I think the principle of proportionate reason applies here. We just can't subject our bodies to any drug without weighing its possible bad effects against the good ones we are trying to achieve. We must have proportionate reasons for running such risks. For example, we take aspirin to get rid of a headache; but if aspirin were proved to have long-term bad effects—say, to be cancer-producing—well, then, you couldn't take aspirin to stop your headache. In that case, the bad effects outweigh the good ones.

Tom Powers: Doesn't this get us into the question of dealing with adults who, being responsible for themselves, have the right to request or refuse any kind of treatment according to whether they consider it necessary or not necessary? Let's say a pro athlete requests an injection of novocain in an injured limb to enable him to participate in a given game. What are the moral and ethical aspects of this case? Doesn't it differ from the case of high school athletes, who are minors and not responsible for themselves? We're now talking about an adult who knows the pros and cons of what he is doing.

T.M.: Not really, Tom. I just can't condone such practices in any situation, for I don't feel an individual should jeopardize himself in that way. He shouldn't participate, he shouldn't make that decision. Just because he is an adult does not mean that he knows exactly what may or will happen; he doesn't have the background to realize all the possible ramifications of his action.

T.P.: I'm thinking in terms of society's structure today. Our youth under 18 or 21 are not allowed to use alcoholic beverages, and we feel that there is reasoning behind that—that these youngsters don't have a sufficient frame of reference to make such decisions for themselves. But what are we talking about here? About the knowledge of the ramifications, or about the responsibility for decisions to forbid alcohol? Anyway, can we keep people from using alcoholic beverages? We tried it with prohibition. Now are we going to pass a law that says it is unlawful for a professional athlete to have an injection? There could be a lot at stake for an individual—the perpetuation of his career, a championship game and the monetary reward that is involved, and so on.

F.O.: Well, I do think it is important to separate the legal and enforceable from the ethical or moral. In the case of liquor, while we don't want prohibition again, we still say that people have a moral obligation to regulate their use of alcohol. I think Tom is saying here that the individual has a moral obligation; he can't subject his body to just anything for any reason. But I would tend to agree that there is a difference between an adult athlete whose livelihood is bound up with his sport and a boy who is subject to adult supervision. Again, the key is proportionate reason. I think there are proportionate reasons which would allow a professional athlete to risk some danger to himself if this is the way he earns his money. Steelworkers run more risk of injury than does a man who sits behind a desk in an office. It's where you draw the line that is difficult.

T.P.: That's my point. There are so many generalizations today regarding these areas that I think it is necessary to differentiate. We have to get down to the various situations and what is involved in each. If you are building a young man for the future and you expect him to make valid ethical and moral decisions, you have to show him the positive and negative aspects of decision-making while he is still young, so that when he is confronted years later with a hard situation he will be equipped to decide rightly. I just don't think you can pass out absolute statements in this particular field of drug use in athletics. Individuals are going to have to make pragmatic decisions—and maybe in some situations, after weighing the good and bad effects, the decision to use a drug may be the best one.

III

Int.: Well, let's take the case of an older player in a Super Bowl game where the winner's share would enable him to complete an investment that would guarantee his financial security in retirement. What if such a player needed a pain killer to keep him going in a crucial part of the game? Would you let him have it?

T.M.: No. Perhaps it's just my makeup, but I can't see it at all. I certainly couldn't do it myself. I have to give a blanket No.

F.O.: Tom, when you give a blanket No, are you saying from your point of view as a trainer that you wouldn't do this to someone else? Or are you saying that you don't think any individual should do this to himself?

T.M.: I don't feel that anyone at any level of athletics should ever inject an individual with a pain killer in order to let him participate. As I said, injections for therapeutic exercises are a different story, but never for participation or practice.

Int.: You feel that the risk of injury would outweigh any possible gains?

T.M.: Yes.

F.O.: You wouldn't oppose such practices for a reason others advance: that the essence of sport is to pit body against body without any artificial supports?

T.M.: Well, I agree with that second principle; but my real point here is the first one—the risk of injury is just too important a consideration. I recall an instance I read about that illustrates my point. An individual prior to a game got shots in both his ankles that enabled him to participate when he really should not have. Of course, when the shot wore off he was in terrible pain, but chances are that in later years he will have serious arthritis in those ankles and may even be crippled. I just can't condone this.

T.P.: The question is, Was that forced on him or was it his choice?

T.M.: Well, at any level of drug you have the freedom to choose. But the real question is, Should we allow him to?

T.P.: But it's hard to be clear cut. You're saying that in later years he may have arthritis. Can you say that from that one set of injections in one ball game this individual will definitely have an arthritic condition in later life? Isn't it possible that there will be no negative reactions from this one instance?

T.M.: But what if he has injections every week?

T.P.: Well, that definitely is a different situation.

T.M.: But who is to determine how often this individual should be injected? Are we going to set up a rule that each college athlete will be allowed a total of 10 or 20 or whatever number of novocain injections in his three or four years of eligibility? Who's going to say? Anyway, if you start to do this, it's just going to get out of hand and we'll end up with a bunch of individuals who are under the influence of all kinds of drugs.

Int.: So besides the danger of injury, your opposition to any drug use for participation would be that you can only see the situation spiraling out of control once you tolerate a beginning to this practice.

T.M.: That is what I feel.

T.P.: Well, do you think a construction worker who asks a doctor for some kind of drug treatment to enable him to work—they get paid by the hour and are seasonal workers besides, and he knows it's near the end of the season and he is about to be laid off—is he wrong to ask for this?

T.M.: Yes. He should not be allowed to work under the influence of novocain or some similar drug.

F.O.: I want to say again that it is a question of proportionate reason. If a construction worker's whole livelihood and family depend on this, I could see how that might justify him in running the risk of an arthritic condition. It's hard to decide, because when you talk proportionate reason, you're always cutting through policy—you can't set a policy any more. I suspect that from your vantage point, involved as you are in setting policy and being in charge, you almost have to come to some absolute and definite position—especialy when you are dealing with kids whose judgment on proportionate reason is not so good. So in the practical order, I would tend to think you're right; but in the theoretical order, I would want to hold out for the judgment on an individual basis that the real risk is offset by the gains the individual sees for himself.

IV

Int.: Let's move now to the second type of drugs you mentioned, Tom—those that are additive, that add an extra dimension of performance to the individual's normal abilities. These are the so-called uppers or amphetamines and anabolic steroids. Dr. H. Kay Dooley of the Wood Memorial Clinic in Los Angeles once stated in *Sports Illustrated* that he saw no difference between giving an amphetamine to a player to improve his performance and giving him a tape job or ankle wrap or salt tablet for the same purpose. How do you feel about that?

T.M.: There's where you run into a great problem. If you take one, you can take two or more to do even better. And if you continue to allow this in your athletes, many of them will be on drugs every time they play, and then they may start using drugs to practice better—and you'll have a society of athletes who are under the influence of drugs. I don't see how you can allow that. What is the purpose of sports—is it a battle between a bunch of dope addicts? And I don't see how you can equate a tape job with drug usage. We tape athletes to support a given limb and prevent further injury. If I felt that taping someone and letting him play would aggravate his injury, I would not tape him nor allow him to participate. Drugs on the other hand do not prevent further injury; in fact, under drugs a person may be more liable to injury.

Int.: So a tape job falls in the category of the therapeutic?

T.M.: Correct. You are just restoring and therapeutically healing the athlete so he can give his normal performance. But with drugs like amphetamines you are artificially stimulating him to a performance beyond his normal capabilities.

F.O.: I think anabolic steroids are a good case in point. [Anabolic steroids are body-building male hormones which some claim have dangerous side effects such as cancer of the prostate, testicular atrophy, liver damage and edema.] There you are really dealing with a direct change of the body tissue—especially when you get into some of the horror stories of female athletes' taking steroids in an attempt to approach male standards of athletic performance. This is just annother example of artificially changing performance. The amphetamine is short range, the steroid is long range, but both build a pepson up to a performance which isn't his natural one.

T.P.: But I have seen precise statements on this very topic to the effect that there is no visible proof of any kind that these things do change performance. One study by a national agency indicated that there is absolutely no concrete proof that anabolic steroids in particular and drugs in general increase the performance of athletes. Somewhere along the line a misconception in this regard got started—perhaps in connection with the Olympics after World War II, where certain athletes from certain countries were discovered to have been using these drugs, and their performances were credited to these drugs. There is no evidence I know of that these drugs do improve the performance of athletes—except that they think that they are performing better.

T.M.: Don't you realize that researchers couldn't possibly come out and say that drugs enhance performance? Because if they made a study it would reveal—say, in the case of a swimmer—that there are drugs that mave a tendency to mask fatigue and therefore to increase endurance. They could not state that these drugs augment performance and then indicate which drugs have what effects, because in so doing they would be providing everyone with a catalogue as to what drugs to use in his particular situation.

F.O.: There are other studies that support Tom Monforti's contention here—that drugs do what they are claimed to do. Andrew Malcolm of the Addiction Research Foundation quotes studies made by Beecher and Smith, who conducted research involving three groups. One group was given a barbiturate, the second an amphetamine, the control group a nondrug placebo. Those who were given the placebo—and who assumed it was some kind of drug—still scored lower in performance than those who had been given the amphetamines. Those who took the barbiturates, on the other hand, thought they were performing better, but in actuality they were not. Thus the result of this study was contrary to the one you cited: the amphetamines did increase performance.

T.M.: I am inclined to agree with that conclusion. From my reading about the nature of these drugs and the reasons they are developed, I think they do increase performance, do produce the claimed effects.

Int.: Is this contradiction in findings similar to that concerning the effects of marijuana? I refer to the fact that official government studies tend to discourage use of marijuana, but independent study give more credence to views that would permit it.

T.M.: That's a very good point.

Int.: If these drugs do have the effects you say they do, why would you oppose their use?

T.M.: I think that the situation—as with the pain killers we discussed earlier—would soon get out of hand, and that there would be a mounting spiral of drug use.

V

Int.: Would you oppose use of drugs because it violates the theory of competition; namely, that one individual or team confronts another individual or team without any artificial supports, relying only on innate ability? After all, we do try to use the best possible equipment, the best possible coaching—and all of these seem to be artificial in a sense and have nothing to do with an athlete's innate skill.

T.M.: But they do. All of those things aid the athlete in giving the performance that is his to give. Further, they don't bring in the added risk of injury. In fact, improved equipment, facilities and coaching cut down the risk of injury. Drugs, on the other hand, violate the ethic of competition by artificially stimulating an athlete. They also entail the risk of injury and undesirable side effects.

T.P.: At one time it was considered part of the coach's job to motivate athletes to perform to the best of their abilities. But it seems that in the past decade or so, use of words to motivate people has more and more come to be considered unsophisticated and passé. It may be that, in the absence of the old-fashioned pep talk, some of the kids who need to be motivated are turning to other forms of "pep." I wonder if this is part of our affluent and sophisticated society. When I played high school football and college ball—and even when I was in the navy—I never saw any type of drug used or even heard it suggested. But in the past 15 years all that has changed. Players seem to be substituting pills for the motivation that the coach's words used to provide.

F.O.: That's an interesting point, and I think it is part of a larger picture. What you say about the absence of drugs in your athletic experience can also be said about American society over the same period. What we are seeing is the effect of an increasingly drug-oriented society on one aspect of that society; namely, sports. We have to raise the question of whether it is desirable to have a culture in which drugs or other artificial props significantly affect the human personality. That's a big problem.

VI

Int.: We've talked a lot about potential harm to the body as a key issue in the use of drugs in sport. But this issue comes up in a general way with certain critics of sports, especially football. The charge has been made by Dave Meggyesy, Chip Oliver and other former football players that, in the long run, to participate in football is to ruin your body. John McMurtry, writing in *Maclean's*, has said that "body shattering is the very *point* of football." Do you agree with such charges?

T.M.: No. Most people who have participated in football and sports have better physical and mental health as a result; had they not participated, their bodies would not be in as good a shape as they are today—except in rare instances involving an injury that has required surgery. And probably less than 4 per cent of all football participants ever require surgery. That figure is extremely low in view of the number of people playing the game—from grammar school on up to the professional level.

Int.: On the basis of the principle of proportionate reason, would you say that parents should permit their child's participation in sports, including football?

F.O.: Yes, I think so. The key question is where and with whom they are participating. I would judge the situation in terms of the caliber and moral character of the people in charge. If winning at all costs—and I mean *all* costs—is the coaching staff's sole philosophy, then I would be hesitant to entrust my child to such men. The winning emphasis is one of the problems that is filtering down to all levels of athletics. It's no longer how you play the game, but whether you win or lose. Vince Lombardi is quoted as saying that "winning is not everything; it's the *only* thing." Well if you go with that as far as you can, then you can say that any means to the end of winning is legitimate, just and right. I would be afraid to turn over my kids to someone like that.

T.P.: Absolutely. But I'd like to point out that on two occasions Bart Starr has refuted that particular statement attributed to Lombardi, terming it a serious misquotation. Lombardi never made exactly that statement; he did make a similar one, but the idea he tried to get across was totally different. What he did say made mention of the value of defeat and the lessons to be learned from defeat. I have always felt that there is no intrinsic evil in athletics per se; rather, it is the maladministration of athletics that produces problems. The danger in football is far less than the danger in driving one's own car. We don't have much control over the conditions we face behind the wheel; but by and large in athletics there are decent people in positions to exert tremendous control over the situation. Competition is as old as the Bible, and when properly supervised it can be a beautiful thing.

VII

Int.: Another question that is raised in connection with pro football is the high level of violence. Some people—especially National Football League propagandists—say that the violence on the field is a good release not only for the participants but also for the fans. Others say that pro football fosters violence in both players and spectators. *Does* the game increase the level of violence in their lives?

T.P.: First of all, I don't know of too many professional football players who are violent off the field; apparently at least the players gain release and don't build up violence in their personal lives. As far as the fans are concerned, many say that some obtain release from watching. Perhaps they do; they may be releasing tensions that intensify during the week with their job and home. The nature of the sport is violent, there is no question about that—and there is a certain amount of violence in all human beings that has to be released somehow. The charge that football-watching increases violent impulses is difficult to prove or disprove. I don't see where there is any evidence of proof one way or the other. How do you substantiate such charges?

T.M.: You also have to take into account individual differences: what will motivate one person to violate conduct may have the opposite effect on another, may serve to relax his aggressive tendencies. It's really an individual thing, and making general statements about it is dangerous indeed. For example, television violence may stimulate one person to emulate what he sees, but the effect on another may be just the opposite.

F.O.: There could be a moral issue here if increases in people's violent impulses could be traced to their watching or particiapting in competitive sports, especially football. But the question is whether such connections can in fact be made. Any moral judgment would have to wait until such facts are in. We need more hard data on the effects of sports—on both participants and speculators—before we can make moral judgments as to whether they are humanizing or dehumanizing.

T.P.: Interestingly, most of the Green Bay Packers who played during the Lombardi era do not share the negative opinions being put forward by Meggyesy and others. Not many of those men feel they were brutalized or dehumanized by Lombardi's determination to win and to produce winners. When the Packers appeared on television, they talked about love rather than violence. We shouldn't be maudlin or sentimental about it, but there's no denying that sports can generate love among the competitors and teams can—and do—promote love and better understanding among people. It's just not fair to focus on one aspect of the question.

Int.: Is there anything more we can say about the level of violence in football?

T.P.: There is a concern for the safety of the individual in football. The National Collegiate Athletic Association makes a study every year of football, related fatalities from the sandlot level on up. At the year's national convention it was reported that fatalities have decreased even though more young people are taking part in the game. This certainly indicates that the people in charge are trying to protect those who engage in this violent sport.

Int.: Would you say that, short of fatalities, it is possible for a coach, by an overemphasibe on winning at all costs ,to damage the boys in his charge?

T.P.: It is entirely possible. At the NCAA convention a plea was made to the assembled coaches to change their language in their dealings with kids. I've been attending these conventions for 18 years, and to my recollection this was the first time such a plea had been made. The speaker said that the change in language is necessary since many of the terms can be misleading. He noted that more and more women are becoming interested in the game, and they are objecting to such phrases as "kill," "spear," "go for the jugular," and so on; such phrases exaggerate and overemphasize the violence that is involved. Though such terms are common in football, they do not mean what the hearer could interpret them as meaning. When a coach yells "Kill the quarterback," he doesn't mean it literally.

F.O.: Don't you think too that the money involved in sports adds a whole dimension? This is where you get something different in pro ball, but it has a way of filtering down.

T.P.: In regard to any of these charges and reports, we must differentiate between the pro athlete who is playing for pay and the amateur who is playing for any number of reasons—to learn more about himself, to try his hand at a combative activity, to exert his growing sense of masculinity. The money factor in pro ball may motivate men to compete more violently, especially when the big bonuses of playoffs such as the Super Bowl are at stake.

F.O.: I think that is why, at these other levels of football and sports in general, it is important to have a coach and staff with straight sets of values. If the coach is totally geared toward winning and getting a good reputation—with a view to a better job—he can pervert the true ends of amateur competition.

T.P.: That was my earlier point. The nature of the game is not the problem. Football need not be overly violent, but it can be if it is poorly administered.

APPENDIX 19

THE USE AND ABUSE OF DRUGS IN ATHLETICS

(By Robert J. Murphy, M.D.)

In May 1968, a race horse named "Dancers Image" won the Kentucky Derby, fulfilling a lifelong ambition of its owner and trainer. Several days later, the Kentucky Racing Commission reversed the decision, declaring that traces of Butazolidin were found in samples taken after the race.[1] It is morally wrong and illegal to "dope" race horses but no such rules regarding humans exist in American sports.

How prevalent is the use of drugs in athletics? Many believe that it is greater than most physicians are willing to admit. In spite of a ban on the use of drugs in Olympic competition, except under the careful supervision of a physician, several Olympic athletes have died in competition, and drugs have been indicted. In the 1960 Olympic Games, two Danish bicyclists died of probable heat stroke after using a vasodilator (Roniacol). In the 1968 Olympics, a French basketball player died during a game and it was later found that he was using amphetamines.

One physician has been quoted as saying: "A weight lifter cannot compete without using anabolic steroids." A recent article in a national sports magazine stated: "Our American athlete, after sustaining an injury, is sprayed with ethyl chloride, given an enzyme and pain killer to pop in his mouth, injected with a local anesthetic, and has some DMSO slathered in the first few minutes."[1]

Many feel that drug use in the United States is a scandal. Most drugs, good or bad, safe or risky, effective or ineffective, legal or illegal, which are used by athletes, are supplied directly by physicians or through trainers. If there is a scandal, it certainly involves the medical profession. Drug use, among college students in general as well as athletes, must be the concern of all physicians, whether these users are our players, our patients, or our children.

In my experience around the country, the use of drugs is far less prevalent than one is led to believe. Most team physicians are treating their athletes in the same manner that they treat their own private patients. As more athletic teams engage a team physician as a member of their staff, you will find more responsible medicine and less witchcraft, which will be to the best interests of all concerned.

This paper is an attempt to classify therapeutic agents according to their effectiveness. The categories to be employed are:

Agents of Proved Value
Agents of Probable Value
Agents of Possible Value
Agents of No Value
Agents Not Recommended

Our group at the Athletic Department of The Ohio State University* has attempted on several occasions to do a good double blind study on drugs in athletics and has found it nearly impossible to do, because the same injury is so variable in different individuals. Almost all the evaluation is subjective rather than objective.

One must keep in mind that the athlete as a person is constantly striving to improve his performance and will follow almost any hint or suggestion that a fellow athlete will make. Whenever an athlete achieves a great performance, all wish to know how he trained, what he eats, or what drugs he might be taking. If a world record is made by an individual who stands on his head 30 minutes a day and drinks beet juice three times a day, you can be sure that hundreds of others will be trying it soon.

Athletes are constantly advocating products, which implies that their performance is related to that product. Athletes in individual sports (eg, track, swimming, and weight lifting) seem more susceptible to fads than are those engaged in team sports. There continues to be no substitute for athletic ability, superb conditioning, and excellence in coaching to produce a great athletic performance.

AGENTS OF PROVED VALUE

Agents of proved value in medicine will not differ from those used in the ordinary practice of medicine. You can rest assured that if there were a drug which would hasten healing, prevent complications, or change the course of an injury, all physicians would be using it regularly.

Tetanus Toxoid: All athletes should have tetanus immunization. Several years ago it was our practice to immunize yearly but recent evidence suggests that harm may come from too frequent use of tetanus, so we have lengthened this requirement to three years.

Polio Vaccine: The number of college athletes who have somehow failed to be immunized is astounding. The proximity of these youngsters during a season makes this imperative.

Influenza Vaccine: There is doubt in some medical circles about the effectiveness of this vaccine. We have used it routinely for the past seven years.

AGENTS OF PROBABLE VALUE

Hyaluronidase: This enzyme is injected directly into an area of obvious hemorrhage.[2] If there is a local hematoma, it is our practice first to aspirate the blood with a gauge 18 needle after infiltrating the skin with Xylocaine. After the blood is aspirated. from 300 to 1500 units of hyaluronidase is injected and pressure is applied for 24 to 36 hours. Cold is applied with ice bag for 10 to 15 minutes four to six times a day.

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*Any team physician who classifies the drugs which I will mention may place them in slightly different categories. My associates at Ohio State and I are not in 100 percent agreement on this list, but we were never more than one category different. If we find a wide divergence of opinion, then we feel that one of us is wrong.

Mild Sedatives: Extensive use of sedatives in athletes is to be condemned. However, there is an occasional athlete who becomes so keyed up on the day of a game that he is simply unable to equal his practice standards. The use of meprobamate 400 mg or phenobarbital 30 mg 60 minutes before the game can be helpful. If there is gastrointestinal upset associated with this, Donnatal or Combid may be substituted.

Steroids: The discovery of cortisone and its derivatives over 20 years ago has added a new dimension to the treatment of athletic injuries. The dangers involved in using steroids by mouth are too grave to risk in short term injuries. Except for an occasional asthmatic or a man with severe dermatitis, we have not found the use of parenteral steroids necessary or wise.

The local use of the injectable steroids does seem to have some value in injury situations. We use them in chronic inflammation, ie. bursitis, tendonitis, periarthritis of the shoulder, and tenosynovitis. We will at times combine them with a local anesthetic. Generally, they are not used until 48 hours after an acute injury. Whenever excess fluid is present (ie. knee or elbow), this is aspirated and an appropriate amount of steroid is injected. This is repeated in three days and then seven days later if needed. Rarely will the use of more than three injections be helpful. We feel that the body produces excessive inflammatory reaction around an injury and the steroids actually diminish this body reaction. If sterile precautions are observed, infection is rarely a problem. Such treatment is never used within 24 hours before athletic participation. It is used as treatment only, not to block nerve impulses in order to permit participation.

AGENTS OF POSSIBLE VALUE

Anti-inflammatory Drugs: Rheumatologists have been using the anti-inflamatory drugs for years with great success. Many athletic injuries are of the same inflammatory category as rheumatic diseases. Tendonitis and synovitis are especially likely to respond.

Salicylates: The desired anti-inflammatory effect of these compounds can be realized only if a salicylate blood level over 20 mg per 100 ml is obtained. Aspirin has a certain analgesic effect at lower blood levels, but if one can attain a blood level over 20 mg per 100 ml, the desired anti-inflammatory effect can be attained. This will require 8 to 14 five-grain aspirin tablets or their equivalent for several days. In order to do this, one must always be alert to the gastrointestinal and auditory complications of the drug.

Butazolidin and Tandearil: These two drugs can be quite helpful in inflammatory disease. Our preference is to use rather large initial doses with rapid withdrawal. We usually give 800 mg the first day and gradually decrease to 100 mg twice a day at the rate of withdrawing one tablet a day. We never use it over 14 days. Bone marrow depression has been reported with the use of these drugs, so one must be quite alert to this problem.

Indocin: In our hands, this drug has not been as effective as Tandearil or Butazolidin, but some athletes will respond to this drug where the other drugs fail. The initial dosage is generally 75 mg a day, gradually increased to 150 mg a day if tolerated. These should be taken with meals. Gastrointestinal complaints and headache must be carefully watched.

Muscle Relaxant Drugs: I have generally not been impressed with use of the muscle relaxant drugs in athletes. If given in large enough doses actually to effect relief of muscle spasm, the resultant weakness will adversely affect performance. They are not as effective as Darvon or codeine for relief of pain.[3]

Enzymes: This broad group of drugs comes from three sources: animal bacterial, and plant. They are purported to enhance the absortpion of blood products, which always accompany injury. In our hands, the use of these drugs has proved disappointing. No harm has resulted from them, and we continue to use them periodically, but we have never been convinced that they alter the basic course of healing. If these drugs were of proved value, certainly every surgeon in the country would be using them post-operatively, but this is not the case.[4]

AGENTS OF NO VALUE

Fads in foods and drugs have plagued athletes for all times. There are many drugs and treatments now being used which, although probably of no harm, have little if any value.[5] To list a few:

Food Supplements, Multivitamins, Vitamin B-12, Vitamin E, Wheat Germ Oil: The average American diet is amply supplied with an excess of vitamins. Adding additional substances is simply an excessive use and the excess is excreted in the urine. It is highly probable that the apparent beneficial effects of these substances are psychological.[6]

Iron: Unless iron deficiency anemia is present, iron is of no value. It is not possible to supercharge a cell with this substance.

Oxygen: Many teams in the country have oxygen on their sidelines. The oxygen saturation of the blood can be elevated with the use of oxygen inhalation, but within 20 to 30 seconds, it returns to the previous level. This would seem to have no practical value. There is even some potential harm engendered by encouraging the athlete to hyperventilate.

Replacement Solutions: Much publicity has recently been given to the sugar-salt solution as a beneficial supplement for athletes. Most of these products are excellent fluid replacement products, and their use to replace lost weight is most appropriate. However, they are not absorbed faster than water, as advertised, and in our experience, they are not as good as water for prevention of heat problems, because one cannot get more fluid into an athlete by adding other substances to the water.[7] The most important factor in prevention of heat problems is fluid replacement. Water is still the best and cheapest fluid available.[8]

AGENTS NOT RECOMMENDED

There is a distinct difference between those drugs which we consider to be of no value but probably not harmful and those which are not recommended and which can probably bring harm to our athletes.

Local Anesthetics: The use of injections of local anesthetics to remove pain from an injured part is condemned, if this is for the purpose of returning the the athlete to participation. Pain is the only way that our bodies have to protect us against further injury. Pain produces muscle spasm, which splints the part and prevents motion. If we remove that barrier, we deprive the athlete of his defenses against further and more serious injury. Partial ligament tears may become complete, and a poorly protected joint may lead to a fracture. Local anesthetic is often valuable for relief of pain and muscle spasm, but it should always be followed by application of cold and immobilization.

Narcotics: We will occasionally use Darvon, or codeine for relief of pain and still permit an athlete to play, but the use of other narcotic drugs should be reserved for pain relief as treatment for an injury not for the purpose of permitting him to participate.

Alcohol: A small bottle of whiskey used to be an important part of a trainer's list 50 years ago, but it is neither recommended nor suggested. Many of us feel we perform better with a little alcohol, but tests have repeatedly shown no beneficial effect from its use, and there are obvious harmful effects.

Vasodilators: Use of several of the vasodilators for athletes has been attemped in a theoretical attempt to increase the blood supply and oxygen available to the muscle cells. These drugs have never been shown to improve performance, but several deaths have been reported with their use.

Amphetamines: The common use of the amphetamines as appetite depressants has made these products readily available. Methamphetamine ("speed") is now a prominent addition to the drugs used by our youth. Studies have shown that there is a slight statistical improvement in performance by some athletes on these drugs.[9] The effects are those of stimulation and increased alertness with relief of depression. They superimpose excitability over feelings of fatigue. They produce an elevation of mood and feeling of well being, thus earning the name "pep pills."

Although physical dependence is rare with these drugs, psychological dependence is common and often leads to excessive use both in dose and frequency and has potential harmful applications.[10, 11]

In the 1968 Olympics, a French basketball player died during a game. He was on large doses of amphetamines.[12] In my opinion, use of these drugs is totally inconsistent with the practice of ideals and sportsmanship. The mechanism of deaths from these drugs is probably by way of cardiac arrhythmias or heat stroke from overextending the capabilities of the athlete.

DMSO: Diemethyl sulfoxide is an old, well-known industrial solvent closely related to acetone. The benefit initially attributed to DMSO by its supporters is the relief of pain. Pain is a symptom of trouble, and relief from a symptom may not cure the trouble. With some chronic conditions, pain relief is undoubtedly a benefit. But in sports, pain is a respected safeguard against the premature return of the athlete to competition. By masking the pain, one can overlook, if not disregard, a significant injury or health problem and thus put the athlete in unwarranted jeopardy of further abuse. The use of painkillers for this purpose has long been condemned by conscientious sports personnel.[13]

The effects attributed to DMSO are explained on the basis that it is a potent solvent and penetrating agent, even a carrier of other agents through the skin. Thus, for example, a football player treated with DMSO could be absorbing toxic "external use only" ingredients of commonly used medicinal products; also, to treat an actively engaged football player with DMSO may permit insecticides and other chemicals sprayed on the turf to enter the bloodstream and to cause serious side-effects.

Any drug powerful enough to alter the body process for a beneficial purpose also is sufficiently powerful to pose significant hazards even in refined form and prescribed use under close supervision. As a recent *JAMA* editorial warned, there is a lack of well controlled studies to evaluate DMSO's effects. Its deadful odor precludes placebo-blind controls, and the sensational publicity has created an aura of eager acceptance smacking of suggestible receptiveness. However, early reports caution the uncritical that if relief is provided by DMSO, it may be of short duration requiring repeated applications to be effective. Moreover, even well controlled studies require years to reveal the more subtle side effects and to reflect long term experiences. There have not been sufficient studies to date to determine whether serious toxicity might result from the repeated applications of DMSO. Finally, corroboration of a number of investigators is necessary to determine safe and effective dosages.

Several deaths from acute yellow atrophy of the liver were attributed to this drug when it was under investigation several years ago. It is, in our opinion, a very dangerous drug and should not be used until much further research is done.

ANABOLIC STEROIDS

An *anabolic* aid may be broadly defined as a food or chemical preparation taken orally or by injection in an effort to increase the rate of growth. The term *steroid* is used to define a large group of substances chemically related to fats. An *androgen* is a substance that produces male characteristics.

These have recently come on the sports scene, particularly in the individual sports, where weight gain seems to be advantageous.

In clinical use, these substances will stimulate growth and will accelerate bone maturation and virilization. They have been used in some anemias, in osteoporosis, and in chronic debilitating diseases where a negative nitrogen balance is present. These substances are necessary for protein anabolism. It is true that they do increase weight of athletes taking them, but the question remains, "what effect do these drugs have on normal healthy males?"

In prepubertal boys, they will decrease the ultimate height by premature cessation of bone growth. Virilization of boys will occur prematurely, decreased testicle size may result, and liver dysfunction has been reported. This liver involvement is of the cholestatic type, similar to that produced by chlorpromazine.[14]

In the adult, as in the youth, liver involvement is a major problem, but it has also been suggested that there is a decrease in libido and increased incidence of carcinoma of the prostate.[15]

SUMMARY

In summary, drugs of any kind are no substitute for good conditioning, excellent coaching, and proper mental attitude. In certain instances, drugs may be helpful, but in normal healthy athletes, it is not possible to "super charge" a cell and most of the drugs we give are simply thrown off by our bodies.

The only modality which has proved itself to be of value in the healing of athletes is the "Tincture of time."

GENERIC AND TRADE NAMES OF DRUGS

Phenylbutazone—Butazolidin (Geigy Pharmaceuticals).
Nicotinyl alcohol—Roniacol (Roche Laboratories).
Lidocaine—Xylocaine (Astra Pharmaceutical).
Belladona alkaloids and phenobarbital—Donnatal (A. H. Robins Co.).

Prochlorperazine—Combid (Smith Kline & French).
Oxyphenbutazone—Tandearil (Geigy Pharmaceuticals).
Dextro propoxyphene hydrochloride—Darvon (Eli Lilly & Co.).

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APPENDIX 20

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PROBLEMS AND DISCUSSIONS

THE STRUGGLE AGAINST DOPING AND ITS HISTORY

(By L. Prokop, M.D.)

The history of mankind is a history of man's endeavor to improve his performance and thereby his chances in combat and sports. Thus there is a long story of administrations that would today be called Doping and as well of endeavors to eliminate such methods. Boje[1] claims that properly stimulating substances comparable to modern doping means were first used by legendary "Berserkers" in Nordic mythology, who are said to have increased their fighting strength twelvefold using Bufotein, a drug won from the fungus Amanitia muskaria. It is also reported that the athletes of Ancient Greece tried to improve their performance at the Olympic Games (end of the 3rd century B.C.) by all possible means.[2]

Detailed reports have come from the Latin and South American areas, where different stimulants, from harmless maté, tea, coffee up to strychnin-like stimulances and cocaine were used to increase performance and to deaden a feeling of hunger during long marches.[3] Hummel[4] reports that West Africans have used Cola accuminata and Cola nitida since antiquity during marches and running competitions. Europe only learnt the use of caffeine-containing drugs towards the end of the 16th century. A doping case with the canal swimmers of Amsterdam is reported by Pini in 1865.[5] When the famous "Six Days" races began in 1879, starters of all nations already had all kinds of wonderous prescriptions to enable them to render these extreme performances. French racers preferred mixtures on a caffeine bases, the Belgians preferred sugar cubes dipped in ether other used alcohol-containing cordials, while the sprinters specialized in the use of nitroglycerine.[6] This was the time when trainers dabbled in poisoning for the first time, producing all kinds of wonder drugs from heroine and cocaine.[6] The first fatality due to doping is reported in 1886, caused by an excessive dose of tri-methyl.

Linton, an English racing cyclist, died during the race between Paris and Bordeaux over a distance of 600 kms.[6] Boxing is the next time, use is made of strychnine tablets, mixtures of brandy and cocaine. "Doping to loose" adds to the problem for the 1st time, cases where performance-weakening substances are administered to opponents. This type of manipulation, also known nowadays as paradoping or antidoping, has become the favorite excuse for foundout dopers.

The expression "Doping" appears for the first time in an English dictionary in 1889 and is referred to as a mixture of opium and narcotics used with horses. The root of this often used word stems back to a Kafir dialect spoken in South-East Africa, from which the word was adopted into Africans, the language of the Boers. "Dop" meant a kind of strong liquor used by the Kafirs as a stimulant during religious ceremonies. Through its spread and consequent application in horse and dog racing doping became eligible for further use in sports. Already the Ancient Romans punished manipulation of race horses before the race, it being said that culprits were subject to crucification. Ancient horse herders, like the Scythians in Southern Russia gave their horses stimulants before going into battle? Doping of horses became so prevalent in England during the 2nd half of the 16th century, that a decree was issued forbidding the use of stimulating agents at horseraces in Worksop.[8]

First scientific proof of doping was obtained in Austria in 1910. The Austrian Jockey Club, disquietened by a number of unexpected racing results, asked the Russian chemist Bukowski to come to Vienna and he was indeed to obtain proof of alkaloids from horse's saliva. Prof. Sigmund Frankel of Vienna University developed his own method of alkaloid determination in equine saliva. In 1910 this was used to test 50 saliva samples, in 1911 already 168 and relevant measures were taken against the grooms.[9]

The years between the wars saw a growing interest in performance promoting drugs on the part of human medicine. Large test series were undertaken. Emden (1919)[10] investigated the performance promoting effect of phosphorus compounds, many others [11] [12] studied the pharmacological effects of benzedrine and the first clinical observations on benzedrine effect were made in 1934. Hauschild in Germany discovered pervitine and, like methedrine in England, it was used for night flying, long marches and other endurance tests during the war years 1939–1945.

By 1933 the word "Doping" had become so accepted in normal language as to be included in specialised dictionaries (e.g. Beckmanns Sportlexikon). Its definitions are proposed by Schonholzer,[14] Demole,[14] Knoll [15] and others, underlining not only the medical, but also the moral-ethical aspect. Beginning with 1950 there is a sudden upsurge of doping. Cycling competitions are found to be special hotbeds of doping. The FMSS takes 25 urine samples during a cycling competition in April 1955 and 5 are found to be positive.[17] A racer is committed to the psychiatric clinic of Montello in a state of mental derangement after administration of amphetamines (Venerando [18]). There is never a cycling championship without a scandal.

Many first measures remain without success, for instance the spot checks of athletes' food and clothing at the 1952 Olympic Games in Helsinki. Some lethal cases were necessary to alarm the public as to the urgency of the problem. An overdose of doping substances causes the death of a 25-year old cyclist. He had taken 15 tablets of amphetamine and 8 tablets of phenyl isoproylamine in a bottle of coffee.[19] The case of Knut Enemark Jensen during the Olympic Summer Games in Rome 1960 is better known..[20] The American College of Sports Medicine reported in 1958 of an investigation of 441 trainers, coaches and assistants, 35% had their own experiences with benzedrine.[18]

Doping with amphetamines is also a fixed habit with many footballers. No punishment is meted out in a large number of these cases, because the culprits always claim procedural deficiencies or doubtful decrees or sabotage as the case may be. In many countries the responsible authorities do not possess sufficient power or they shrink from hard measures against popular athletes because they do not want to be unpopular. An inquiry of the Italian football association revealed the alarming situation that 17% of all players used psychotonics during the match.[18] Boxing also has its doping scandals. The welter weight Billy Bello dies from heroine intoxication in 1963.

The bantam weight Edmundo Esparso goes into the ring doped and is disqualified for three months.[21] Denunciations concerning doping were raised e.g. against Olympic champion Livio Berutti (Italy 1960),[22] the Russian runner

Wladimir Kuz.[23] The British racing cyclist Simpson died of doping like the German boxer Jupp Elze. It should be noted that some of the international associations most affected still behave very passively in the struggle against doping, for instance the UCI. Important officials frustrate sufficient doping controls, particularly where their own nationals are concerned, so during the Olympic cycling competitions in Tokyo 1964. The ANEP founded the first commission in 1959. the same year sees the doping problem treated as a pre-eminent problem at international sports medical congresses in Paris and in Evian, where effective measures are called for. Earlier sports medical congresses and inquiries (Zurich and Weimar 1955, Hamburg 1957) had treated doping as a more or less interesting phenomenon without true topically. A doping enquête is organised by the Italian Association of Sports Physicians (FMSI) in 1962 and the IOC takes a decision against doping in its session in Moscow of the same year.

The Austrian government is the first to introduce specific measures against doping. A doping commission is formed by the Federal Ministry for Education and the ministry threatens serious sanctions against all doped athletes and their associations. A decisive initiative against doping is initiated by the Council of Europe, calling together an expert commission in January of 1963. This commission sees its task to work out a definition of doping because lack of a satisfactory definition has been shown in the past to be the greatest hindrance to satisfactory action against doping.

The definition is confirmed in the same year by the 1st European Colloquim at Uriage and at the Congress of Sports Physicians in Barcelona. One of the greatest problems in practice being the difficulty of the delineation of a medically indicated treatment with stimulating substances from a clear case of doping, decided the next session of Experts for the European Council a necessary addendum. The list of substances included with this definition comprises narcotics, weckamines, certain alkaloids such as strychnine and ephedrine and as a matter of principle all analeptics, respirotonics, psychotonic agents and certain hormones. Congresses of UNESCO 1964 at Ghent and Brussel, the World Congress against doping during the Olympic Games in Tokyo 1964 the Second National Congress for Sports Medicine in Chile, numerous national symposia in Germany, Austria, Italy, Switzerland, England and finally also a further congress of the Council of Europa at Strasbourg in September 1965 demand energetic action by the responsible authorities in sports and by the governments to stop injury to the health and the ethics of sportsman caused by doping. A law bill is submitted to the French Senate in November 1964 and finds unanimous acceptance so that the Law against Doping comes into force in 1965. Belgium follows on April 2, 1965 with its own Doping Law. Many countries cannot pass such a law because of constitutional reasons or they reject its passage, claiming that unauthorized possession, sale or use of drugs that lead to addiction are already punishable by laws against addiction drugs. Despite all this there are always again physicians handling these substances with an astonishing liberality, administering doping substances for commercial reasons or from falsely understood chauvinisme for "patriotic" reasons. Other physicians try to dilute the concept of doping naively or from lack of practical experience, referring to permissible and unlawful agents or trying to introduce a concept of "sports pharmaceuticals" (Fischbach[24]). The strong line taken by some governments and international sports associations in the course of the last 5 years has produced important results. Many associations now have their own doping commission.

It is interesting to note that the decrease in the number of positive cases is much less among professionals than among amateurs. The trend has moved away from amphetamines to somewhat less harmful substances. According to an Italian report by Venerando[25] the number of doping cases among the cyclists controlled decreased between 1956 and 1968 from 32.94% to 2.70%. The strong line taken and the campaign of instruction among footballers in Italy has also brought results.

In 1967 the IOC took the important and highly significant step of founding a Medical Commission, chaired by the Prince de Merode, consisting of 5 physicians and a chemist. It took up his work with routine investigations during the Olympic Winter Games 1968 at Grenoble. In Mexico City difficulties arose in connection with the activity of this commission during the Games and it was somewhat limited in its scope, because the president of the IOC, Mr. Brundage, shifted responsibility for doping control to the competency of the international sports associations only three months before the Games began. Interpretation of the doping problem also differed and was most liberal in the International Cycling Union (ICU), it allows the use of ephedrine, a classical doping agent.

There are of course still unsolved borderline problems on the fringe of the doping complex. No uniform attitude has so far been developed toward the use of anabolic hormones. Thus there is also a lack of generally accepted rules. As doping controls in Mexico have shown it is to be expected that some new substances, so far unknown, will turn up at times and being unknown, they will not be included in the doping codes for a while.

A certain amount of unification of doping rules by international associations has been going on, some of them as e.g. the International Rowing Federation (FISA) and the International Amateur Athletic Federation (IAAF) have fully adopted the basic IOC rules. Lately improved procedures of urine sampling and of determination by means of thin layer and gas chromatography are valuable aids in the struggle. How far any such appeal can be effective in the professional sector is partly dependent on whether the seemingly convincing argument that professional health risks are a matter for purely individual decision, can be invalidated. If this motivation were to gain ground and lead to a dilution of anti-doping rules in professional sports, it would finally lead to dangerous manipulation of athletes by officials and physicians purely for financial gain. Our struggle against doping must, however, remain in the hands of the most suited and knowledgeable people. We must not hand over to the police and let them control the sports grounds or allow them to act on their discretion as is their wont in the regulation of road traffic.

The main load in the anti-doping campaign must needs continue to rest on the shoulders of responsible physicans. They will continue not only as guardians of the health of the individual athlete, but also as guardians of the magnificent idea of sport in itself.

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APPENDIX 21

ADDICTIONS

DRUGS IN MODERN SPORTS

(By Andrew I. Malcolm)

Every aspect of our culture today is being examined, criticized, and subjected to change. It is as though a thousand years of evolution are now expected to occur in the course of half a lifetime, and any advance more leisurely than this engenders our lashing impatience.

Sports, no less than any other area of human activity has engaged in the headlong rush into modernity. Sports has become cunning and sophisticated, and it has participated in the universal trend towards specialization. Two quite distinct groups of people have been identified, and their roles have been defined with increasing certainty.

Though it is true that there have always been spectators and players wherever games have been played, we must recognize that today the roles of these two groups of specialists are far more rigidly defined than they have ever been before. Today we have passive watchers and active gladiators, and both groups know precisely what they must do. The watchers must exhort the gladiators to exceed the very limits of physiology. The gladiators must oblige or be ignominiously discharged and reduced to the status of passive watchers. There is no place for human frailty, spontaneity, or joy. Sports has become, in our time, a deadily serious business.

Now perhaps all this is an absurd and misleading exaggeration. Perhaps it is the sort of ignorant oversimplification that one would expect from a person who has not himself participated in sports for many years and who, in fact, is not even a very learned or impassioned watcher. Under these circumstances I will have to construct my argument with care.

"The name of the game is Win"

First of all, then, we must agree that the two groups of specialists I have identified do indeed exist today. This certainly seems to be the case at the level of professional athletics at any rate; and there is much evidence to suggest that in the colleges and high schools a similar development has occurred. Moreover it must be granted that a primary object of the game is to win. And winning depends on the nicest integration of skill, physical fitness, good fortune, courage, and an intense desire to excel.

Now if all this is true, then it must follow that any tendency that would influence in any way these several variables would be enthusiastically adopted by the players and encouraged by the watchers. Thus over the past few decades an immense amount of knowledge has been gained in such diverse areas as recruitment, role assignment, strategy, nutrition and physical conditioning. Graphs that illustrate the records of succeeding Olympic Games are altogether astonishing. In a number of events the women, who have proceeded along a curve identical to that of the men, have already passed the best achievements of the men of forty years ago.

It must be that sports has been presistently receptive to the knowledge that has been gained in many other fields. Sports has not been an isolated element in our culture. Rather, it has been an integral part of it in the sense that it has influenced the rest of the culture and has in turn been influenced.

We have lived for some time now in a culture that has been relentlessly scientific. Though there have been extraordinary advances in a thousand directions, no advance has been more successful than that of chemistry. The athletes have not been receptive to every other source of knowledge while steadfastly refusing to be influenced by the chemists. On the contrary, they have been fascinated and very much assisted: and, presumably, they have been grateful.

There has been very little resistance to the introduction of drugs to athletics. After all, in our chemophilic society the easy use of drugs is condoned, encouraged, and imperfectly controlled. And the athletes and coaches live in the same society as do the people who consume both athletes and drugs. It follows from this that if pains, both mental and physical, are freely treated outside the stadium then this same therapeutic attitude must prevail within. Consequently, athletics has very much participated in the general trend towards the increasing reliance on drugs in the performance of its work.

Kinds of drugs used

Three groups of drugs may be considered in this regard. These are the restorative drugs, the body-builders, and the stimulants. The restorative drugs are used primarily to treat medical or psychological conditions so that the athlete may be able to compete unhindered by bruises or anxiety. Thus, athletes may be inclined to use the tranquillizers, the sedatives and the muscle relaxants as uncritically as anyone in the general population.

Similarly, the use of such local anesthetics as novocaine and ethyl chloride and any of the systemic pain killers seems unexceptionable. By very logical extension, it is quite easy to conclude that such anti-inflammants as phenylbutazone and cortisone should reasonably be used. And having accepted these drugs, it is not very difficult to accept the use of what have been called the anabolic steroids. It is all a very insidious progression that eventuates in a situation that challenges the basic ethics of sports.

Steroids build muscles

The anabolic steroids are hormones that are derived from various plant and animal sources. Androgen, the male hormone, is an anabolic steroid. Now when an athlete, male or female, takes such a drug as Danabol, Durabolin or Nilevar there will follow an accentuation of male secondary sexual characteristics. Thus the voice will deepen, the beard will grow, and the muscles will develop in a typically masculine fashion. The assimilation of protein is facilitated, and thus there is increased muscle mass and body weight. It is by no means established that these anabolic steroids actually improve performance, because muscle mass does not necessarily correlate with strength. Nevertheless, a large number of athletes have apparently concluded that the mere possibility of such improvement justifies the risk and inconvenience of taking these drugs.

The body-building drugs occupy an intermediate point between aspirin and meprobamate on the one hand and the stimulant drugs on the other. With all three groups, of course, the goal is the production of a more efficient competitive instrument. The athlete may be restored to good health with the analgesics, and no one will complain. It is medical and therefore sanctioned by society. He may be given greater power through the use of the male hormones, and again no one will complain. It is a rational application of modern technology, and every athlete, presumably, longs to be a supermale. He may be exhilarated and given greater endurance by the stimulants, and again, it would seem that hardly anyone complains.

This process, if projected into the future, will finally be very injurious to sports; therefore a re-examination of the matter is very much in order. The question is whether the drugs do improve performance, whether such improvement justifies the risk, and whether the very creation of drug-assisted athletes enhances the value and prestige of the sporting arts.

Of the many studies designed to measure the actual effect on physical performance of the amphetamines, the most convincing have been done in the area of sports. Smith and Beecher carried out a series of studies on the effects of drugs on athletic performance. In one of these studies they observed 15 college swimmers, in mid-season condition, swim 360 time trials after receiving 100 mg. of secobarbital, or 14 mg. of amphetamine, or a placebo. After the trial, the swimmer estimated his time and the quality of his performance.

The barbiturate significantly impaired performance and caused the swimmer to judge his performance as excellent when in fact it was unusually bad. The amphetamine significantly improved performance and had no conclusive effect on judgment. The difference between the amphetamine and the placebo in terms of performance was small—a mean of 1.16 per cent—but it must be noted that athletes commonly train for months to gain just such small improvements.

Amphetamines improve performance

In another study, nine track men ran various distances in competitive groups of three. Eight out of the nine ran faster with the amphetamine than with the placebo. The most remarkable improvement with the drug occurred in the case of shot-putters. The mean distance was improved by 4 per cent—a strikingly large increment.

In studies on motor co-ordination and control, caffeine had little effect on reaction time but the amphetamines definitely lowered it, especially in fatigued subjects. Caffeine had no effect on co-ordination, but amphetamine improved this factor as well. Caffeine impaired hand steadiness, whereas amphetamine improved it. In fact, in every test from running the mile to passively monitoring a screen, amphetamine improved performance over the placebo, caffeine had little effect, and the barbiturates and alcohol diminished the quality of the performance.

Not a placebo effect

Nor can it be held that such improvement is caused by the mere inducement of lighter spirits and therefore more favorable attitudes towards the work. It is much more likely that the stimulants caused both attitude changes and performance changes, and that these factors are at least initially independent of one another. Nor can it even be said that only performances degraded by fatigue can be improved by the stimulants. Athletes in conditions of rest exceed the best efforts that they can make on other occasions on placebos. Moreover, athletes engaged in such tests of static strength as weight lifting and operating grip measuring dynamometers also show definite improvement in performance.

Of course there are at least a few studies that report no change in athletic performance. Karpovich, for example, gave 20 mg. of amphetamine to 54 male athletes either one-half hour or one hour before the test. He found no significant improvement in operating treadmills to exhaustion, or in track events or swimming. It may be of some importance that this investigator ran his tests well before the known peak effects of the drug might be expected. Moreover, he used decidedly lower doses than were used in other studies.

Significant improvement

The consensus, then, is that sedatives diminish performance and the stimulants—especially the amphetamines—improve it. The improvement, it is true, is very slight; but it is significant all the same. And today the tense and serious state of athletics is such that any slight advantage is highly valued.

It is a very interesting thing that it is horse-racing that has been generally awarded the reputation as the one sport in which illegal doping occurs. The reason for this is curious in the extreme: in the United States, horse-racing is the only sport in which there are written regulations controlling the use of drugs.

Dancer's Image was involved in a great scandal after winning the Kentucky Derby because phenylbutazone was found in a urine sample. No professionals playing football, basketball, hockey or baseball were similarly examined in 1968. These sports, it could be correctly assumed, could not be charged with such outrageous ilegalities as had occurred in Louisville. Yet phenylbutazone was widely used by men playing all of these sports in 1968. The National and American Baseball Leagues have no rules regarding the use of drugs. The professional football leagues, the American Basketball Association and the National Hockey League have no written rules relating to the use of drugs.

Bicycle racing bans drugs

It is of further interest that international bicycle racing has achieved an especially bad reputation for drug use. The European cyclists, it would seem, rely heavily on the use of stimulants. Again, the real reason why cycling has this reputation is because it is one of the few sports that specifically bans the use of drugs. The International Olympics Committee, of course, has made every effort to control the use of drugs. The committee specifically bans amphetamines, cocaine, the opiates, hashish, the more potent analgesics, and the excessive use of alcohol.

From time to time, amateur sports organizations in Canada and in the United States express some concern about the use of drugs among young athletes. They publicly deplore the state of affairs that obtains in professional athletics, and they threaten to discipline any of their own coaches and athletes who are found to be using, supplying, or even advocating the use of drugs. Yet these very governing bodies are, at least, to some extent, responsible for the problem. The spirit of competition is no doubt crucial in sports; but today this spirit has become very intense, and the element of enjoyment has been virtually excluded in the process. The athlete who establishes a record or wins a race is honored out of all proportion to the significance of his achievement, and in this way the end has insidiously come to be justified by the means.

"Win at all costs"

In sports, it would seem, anything that will increase endurance or improve the excellence of the perfromance is readily accepted. The apparently remote consequences of drug use seem to be outweighed in importance by the immediate and entirely measurable advantages.

Thus we now have our gladiators; and these remarkable people are technical and physical specialists. They cannot do many things, perhaps, but they can do at least one thing more efficiently than anyone else. It may even be that the emergence of the gladiator is a benign and agreeable characteristic of our time. The watchers would certainly agree with this. The real significance of the matter is that the gladiatorial impulse has not been confined to the relatively small number of professionals. Today we may observe this phenomenon in progressively more minor and juvenile fields. And to whatever level it permeates we see a concomitant interest in the restorative, body-building, and stimulant drugs.

Two questions

Two questions, then, are worthy of our attention. Should the gladiatorial impulse be allowed to invade and establish its supremacy over amateur and especially juvenile athletics? and, finally, should we be pleased and complacent on observing that sports has advanced into the modern world and has become more breathtaking—more downright entertaining—through the use of a dazzling array of chemicals?

APPENDIX 22

> The special health hazards inherent in athletics often lead to valid medical reasons for administering a drug or drugs to an athlete. Drugs used in these instances are often called "restorative" drugs, or drugs that provide immediate physical relief to an injured athlete and hasten his recovery. It must be emphasized that restorative drugs are not intended to be administered to an injured athlete for the purpose of allowing him to continue competition in spite of the injury. In all but the professional athlete, this represents a grave example of drug abuse.

THE USE OF DRUGS IN ATHLETICS

(By Gary G. Buterbaugh, Ph. D., Assistant Professor of Pharmacology, University of Maryland School of Pharmacy)

Many drugs have little or no rationale behind their use in the normal, healthy athlete. These drugs have often been referred to as "additive" drugs, or drugs used with the sole purpose of stimulating the athlete or increasing his performance beyond natural limitations. Many of these additive drugs are particularly dangerous because they further strain physiological systems already strained by physical exertion and, furthermore mask the symptoms of developing fatigue or exhaustion.

One of the most common occupational hazards of athletic competition is, of course, pain, and includes not only the pain of serious injury but also the continuous small aches and pains. An athlete is often distracted by even the smallest pain, probably because he is aware that he has access to drugs that will provide relief. Thus, it is not so unusual that pain represents one of the most common reasons drugs are used in sports.

There are two general kinds of anti-pain drugs: the local anesthetics such as Novocain, Xylocaine, and ethyl chloride spray; and those that suppress pain by acting on the central nervous system, including morphine, Demerol, codeine, and pentazocaine (*Talwin*). While these drugs will relieve pain, it should be remembered that the cause of the pain must be determined and eliminated rather than masked by drugs. No competent trainer or physician ever administers a pain-killer and sends the athlete back into competition if the injury involves a weight-bearing structure. If a boy continues to play with an injured knee or ankle, it is obvious that the injury can be aggravated. One cannot help but wonder how many athletes suffer serious injury later in their career because they played with injuries masked by pain-killers. Is the immediate victory really worth the possible permanent crippling injury to the athlete and the prevention of a possible professional career?

There are, of course, other problems associated with the use of pain-killers. Xylocaine often causes sedation, and the continuous use of Novocain, depending upon the individual, can produce side effects ranging from excitation to coma to convulsions, as well as many allergic-type reactions. The potent narcotic agents present the added danger of developing a tolerance to the pain-relieving properties of these compounds. If the athlete manages to escape aggravation of the injury, larger and larger doses are needed to suppress the pain. Aside from possible physical and psychological addiction, a real problem is that he does not develop tolerance to other effects of these compounds. These effects include pupillary constriction with possible interference with vision, contraction of bronchial smooth muscle which would contribute to respiratory difficulties and, finally, severe constipation. All of these will impair the athlete's capability to compete satisfactorily.

A special category of pain-relieving drugs includes the anti-inflammatory compounds such as cortisone, hydrocortisone, and Butazolidin. These compounds are often injected into the synovial space of injured joints to relieve swelling and inflammation. Contrary to popular belief, the use of these compounds can be extremely dangerous, even toxic, especially when used over extended periods of time as they are often used in sports. The biggest danger is that although the inflammation is relieved, the cause of the inflammation is not. Therefore, the athlete must be cautioned to limit activity of the treated joint even though there is distinct symptomatic relief, as the inflammation remains active and use of the joint may accelerate cartilage deterioration. Cortisone can lead to the gradual degeneration of bone structure. Thus, the continued use of cortisone to relieve pain and swelling in a pitcher's elbow while he continues to pitch may lead to degeneration of the elbow with crippling results. The same applies to a fullback's knee. Butazolidin produces toxic reactions in about 25 percent of those persons treated with it. These range from peptic ulcer to bone marrow depression to fatal blood disorders. It should be obvious that the promiscuous use of these drugs in order to keep an athlete in competition is to be avoided and condemned.

In addition to pain, a frequent problem encountered in athletic competition is the ever-present tension and continued pressure placed upon the athlete to win. Many athletes may need and even demand antispasmodic and tranquilizing drugs to control pre-game jitters and nausea. Considerable variation in opinion exists among coaches and trainers as to the use of these drugs, since the problems encountered are ethical, rather than medical. The natural limitations brought about by an athlete's inability to deal with pressure should not automatically make him eligible for a tranquilizer. The same principle applies to those athletes as applies to those taking pep pills: They are attempting to derive something from the use of drugs which they do not think they naturally have.

Another problems arises from the fact that any of these tranquilizing drugs—Miltown, Nembutal, Equanil, Librium, Thorazine, etc.—cause some degree of sedation. Since these drugs are often given to athletes participating in action or motion sports, the trainer or team physician who administers them is often walking a tightrope between calming the athlete and sedating him to such a degree that his athletic ability is impaired. The high-strung and jittery cornerback may be calmed before the big game but may be so sleepy during the game that he is beaten on a pass pattern.

Many of the preparations, especially the antispasmodics, contain ingredients which affect the innervation of the eye, causing blurred vision. This could be especially disastrous to a baseball or basketball player. In addition, an important consideration is the development of potentially hazardous drug interactions involving the central nervous system resulting when more than one of these compounds is administered simultaneously.

In spite of the specific instances where the "restorative" drugs may benefit the injured athlete, we must remember that drugs are meant only for the treatment of injury or disease. They are not meant to be used as a "chemical-crutch" to substitute for the natural physical or psychological athletic prowess of the sports competitor. I think it is justified to again stress that no drug should be used for the sole purpose of keeping an athlete in competition. If the injury or emotional disorder is serious enough to warrant the use of drugs, the athlete should not be allowed to compete until the problem has been solved.

And finally, you are again charged with the responsibility of setting the example of intelligent drug use to the young people of our society. They, in turn, can develop a respect for drugs and will, hopefully, avoid the indiscriminate and uncautious approach to drug use which so often leads to drug abuse.

APPENDIX 23

How "Speed" Kills Athletic Careers

(Today's Health, Feb. 1971)

(By William Barry Furlong)

The face was pinched. The eyes were sullen. The lips were thin and embittered. He was 19 now and his athletic career—his "life"—was over. The reason: He had too much "speed."

Not the physical kind. The pharmaceutical kind—dextrose amphetamine sulfate. He needed it for football—to get "up" for the game. He learned to use it from older boys on the team but soon he was using it solely for its own sake. "I use speed because—like it makes you feel *powerful*," he said. "Like you've got something *great* locked inside you."

The thing he had locked inside of him was an illusion. It was the pathetic dream of modern man: If he could feel great, he might *be* great. He bought the dream packaged in pills and in powder. He found in the dream nothing but a lie. His skills in football brought him a certain celebrity in high school and a scholarship to college. But the pills had paid the way. And they were to exact their cost.

"The practices were worse than the games," he said of his freshman year in college. Practicing against the varsity daily, the freshmen were put through the meatgrinder. So he began taking speed to get up for the practices. And then he began taking it again after practice in order to get up again for his night-time tutoring hours. Suddenly he realized he was on more than he was off. He couldn't drop off to sleep at night and his appetite began failing. His weight began dropping. His grades began dropping. His performance on the field began dropping. His coach wanted to know why—and the boy didn't dare tell him. He was afraid that if he told the truth he'd be dropped from the squad and his scholarship cut off. He was afraid that if he lied, they'd find out about his habit. So he dropped out—out of school, out of his scholarship, out of sports. "I would have been out anyway, no matter what I did," he says. "But um—this way I didn't have to tell anybody *why*."

For generations, the idea was that sports were an antidote for the erratic spirits and combustible energies of the young man. It was a sanctuary of the spirit where a boy could prove himself *to* himself—and to his peers. It was taken for granted that sports would be a counter to the drug culture of the current crop of teen-agers: Sports demanded a fitness of mind and body that the habituating drugs destroyed. Now a profound doubt has been cast on this theory.

The unhappy fact is that drug-infiltration is moving faster into sports than the ability of the coaches to counter it.

"Kids today are exposed to marijuana in junior high school," says Murray Lazier, football coach at Evanston (Illinois) High School. "They know about it before we ever see them."

So what does he—as a successful coach—do about it?

"I think it's unfair to penalize a sophomore who's caught smoking pot or drinking on his first or second offense. A sophomore doesn't know what the total situation in life is all about yet.

"A coach can't stop a boy from smoking marijuana," said Lazier. "Frankly, we don't worry about him on the football field—we know he won't be able to cut it if he continues the habit." That gets rid of the boy—but the boy doesn't get rid of his habit. It does, however, prevent a young drug-taker from rising to a local celebrity as a sports star as he gets older; thus it prevents him from becoming a model in drug-usage for younger boys.

Murray Lazier recognized the problem and was willing to talk about it. Most coaches do not. Some of them are like parents. They prefer to avert their eyes from painful reality. For drug-taking among their teen-age charges implies a failure in them—and in sports. And—like certain parents—they don't want to get hung, and hung up, with a guilt for what their teen-agers are doing.

They are not alone. The athletes themselves are reluctant to talk about it. Their motives are mixed. Some are apprehensive about retaliation at school. "They have a way of finding out who's informed," I was told—and the implication was that the school administration was as concerned as anybody else about keeping discussion of drug-taking out of public view. Others feared the rigid dogma within sports that nothing critical can be said about sports.

Some athletes are going on to college and they might be stigmatized by their coaches—or by their fellow athletes—for talking candidly about drug-taking. Others simply don't want to be identified, however innocently, with the drug scene, for gossip is easily distorted—and swiftly passed from mouth to mouth—when it relate to drugs.

Some time ago, Rick Mount, then a superb basketball player for Purdue, was observed taking a pill before a basketball game. The rumor spread, in a small, furious circle of gossip, that he was on some kind of drugs. Anyone who knew Mount found it hard to believe. He is so scrupulous about his physical condition that he sent his sweat socks home to his mother to be laundered because he didn't trust the university laundry to get them clean. (He's suffered a severe foot infection while in high school that might have been aggravated by dirty sweat socks.) It turned out that the pills he was taking were salt pills, provided under a physician's direction, to relieve the severe leg cramps that he sometimes suffered.

The reluctance of people in sports to talk of their drug problems inhibits a solution to those problems. It also demands a certain discretion: The athletes—and drug-users—must remain anonymous. But by examining a few personal experiences of athletes, we can gain some insight into the motives and pressures behind their drug use.

Case A: A young man just out of college, who won five varsity letters in high school, was all-state in wrestling, and who went on to play varsity football, track, and wrestling at Tulane. "I never took drugs when I was in high school," he says. "Drugs weren't the big thing then. It was booze and broads."

The reason he first tried amphetamines was a mixture of pressures—academic and athletic. "I think that a lot of jocks start taking them the same way everybody else does—they take them the night before an exam so they can stay up studying. I mean, you don't do all the studying you should do—maybe because you've been at practice—and the night before the exam you try to stay up and make up for everything."

He saw a correlation. He took pep pills when he was academically out of shape. Perhaps he should take them when he was athletically out of shape. "This is what happens to a lot of jocks. They aren't much in shape at the start of a season and suddenly the competition for a place on the team looks pretty hot and so they start taking 'speed' to get themselves jacked-up for a workout," he says. The interesting thing is that the amphetamines helped improve a performance *only* if the athlete was out of condition.

"If you're in good shape and can run a hundred in 9.4," one sprinter told me, "speed won't help you do it in 9.3 or 9.2. But if you're out of condition and running it in 10.1, speed'll help you do it in 9.9 or 9.8." Otherwise, the amphetamines gave the athlete no more than a psychological boost.

"I'd go to a workout with a feeling—well, that I had a real *aggressive* look on my face," the youth from Tulane told me. "And—uh—well, my body *felt* aggressive."

He knew that the speed had a somewhat distorting effect. "You had the feeling in track that you were running in two different lanes—I don't know if I really was," he says. In football he was a kickoff-return specialist and he found it hard to "concentrate on what my blockers were doing" even though he thought he saw openings with "greater clarity."

He felt that the speed made him more inward-looking, without the awareness of what was going on outside of his own being. He remembers that he "wasn't aware that there were people in the stands" and that he wasn't much affected by the score of the game, particularly a disastrous score.

"You'd finish the game with this pleasant little smile on your face, even though you had the hell kicked out of you," he says.

It was this curious detachment that prompted him to refrain from taking amphetamines before wrestling matches. "I'd used dextrose and sucrose for quick energy," he says. "I was afraid of amphetamines. Your mind isn't sharp—well, maybe it's sharp but you're not concentrating well on successive small details. And I felt that in a physical contact sport like wrestling, this would be a mistake—it could get quite dangerous."

He started out taking only small doses of speed for track and football. It wasn't hard to get as much as he wanted. "My father was a doctor and I'd bring some from home every time I came back to school," he says. But it was never difficult for any of the athletes to get all the drugs—and all kinds of drugs—that they wanted. Tulane is in New Orleans, a port city. "You could get almost anything you wanted there," he says.

He took his biggest dose when he was about to run his biggest race. He was entered in a mile run against Jim Ryun, one of the finest distance runners in the world. He'd never run a mile because he was a sprinter. "But the coach wanted me to draw him out to a fast 220"—in an effort to exhaust Ryun's best effort at the start of the race. "So I took a big dose, a very big dose, before this race," he says. It worked. He got revved up astonishingly—for a brief exhilarating time. "I hit that first turn and I had dilusions of grandeur," he says. "I thought, 'I'm gonna be able to keep this up. I'm gonna *beat* this guy!'" Reality set in after a few more strides. "Eighty, a hundred yards farther on I thought my tongue would drop out of my head." He staggered and wobbled for a whole lap and then dropped out of the race. Not even his basic mission had been performed.

In this—in all of this—there was an ultimate futility. "The pills never helped me lower my times," he says. Greater difficulty came after the race. "I couldn't get my body to slow down." Normally the process is predictable. Homeostasis sets in—the temperature lowers, the blood vessels dilate to accommodate the demand for more blood and the oxygen it carries, and the physiological system comes back to equilibrium. But one of the effects of the amphetamines is to contract the blood vessels, so the heart must keep pumping hard to meet the body's demand for blood—and oxygen. "It takes you a lot longer to come down," he says. "And when you get down, you *really* get down. I mean, you feel so low that you want to take a pill or two, just to make yourself feel better." And that, of course, is one of the cycles that leads to a drug dependency.

For this young man, it stopped short of that. He was too aware of what was happening. He planned to study medicine. And so he went off speed when he got out of sports. As it happened, it was made easy for him. He was severely injured one day, enough to sideline him for all sports for the rest of the academic year. "And I never went back after that," he says.

Case B: This involves a teen-age boy who is a swimmer on one of the finer high-school tank teams in the nation.

Swimming is a most demanding sport. It pits the swimmer against himself and against time even more than against another swimmer. Thus the pressure is always on the swimmer to be up. He can't count on victory because another competitor is down. He's basically racing against time, which is immutable.

At first, this boy—whom we'll call Mark—took speed before a swim meet. His coach didn't seem to know it, at least he never said anything about it, but his parents did. And they approved. The reason? They were intensely competitive and they wanted to get their vicarious experience by having their boy excel in, not merely enjoy, swimming. They wanted him not only to win but to set records. His mother, in particular, was anxious for him to succeed at swimming. It wasn't just that she didn't object to his taking amphetamines. It was that she encouraged him in an indirect manner.

"Well, it isn't as if they *hurt* you," she'd say. "They're not *really* a drug." But they *are* really a drug. They are just not addictive in the same way that heroin is addictive. Heroin is physically addictive while the amphetamines are psychologically addictive. The users can develop a strong dependency on the amphetamines but getting off them involves an effort of the will, not a torment of the body. In any case, Mark felt that he had considerably more than the tacit approval of his parents in taking speed—as well as the approval of his peer group and no opposition from his coach.

So he increased his use of them. His weekly doses—before swim meets—was increased to a daily dosage, before practice. Then he found his need increasing sharply.

"You use up a lot of calories in swimming and so you usually work up a pretty good appetite," he says. But amphetamines reduce the appetite. Indeed, they are sometimes prescribed for persons who must lose weight. This boy began losing his appetite. So his weight began dropping and he tended to feel sluggish. His swimming time, in practice and competition, began falling off. His solution was to take more and more uppers in an effort to get up to his former performance.

But he was an aware young man, even a sensitive one. He began questioning himself and his reliance on the pills. "Where were these things taking me? Was I going to depend on them for the rest of my life?" The answers frightened him. He wanted a way out but the most obvious source of help—in the old mythic traditions of sport—was his coach and coaches don't want to meet drug problems head-on.

Curiously, it wasn't sports but a drug-contact in the student body at large who gave him a chance to break out. That student was himself trying to break a drug habit and he mentioned to Mark that maybe his doctor could help him. Mark thought it over and decided to try it—"a doctor was better than doing nothing."

His hopes were not high. The doctor interviewed him, reviewed his habit, and came candidly to the conclusion that Mark had progressed far enough along the route to drug-dependency so that he "did not feel comfortable in society without them." Mark had to face a hard fact: He did not need speed for swimming. He needed it just to go on living. How to break his dependency? The doctor urged him to go off speed cold-cock. No gradual decrease—just stop.

That shook the boy up. He thought first of the impact on his swimming. "Won't my times go up?" Yes—very likely. "Then the coach will ask why and maybe I'll have to tell him I was all strung out on speed." The doctor admitted that might be the case, but it didn't mean the coach would drop him from the team. "After a week or two, your times may come down to normal again." he said

But still the boy was not sure. He didn't know if he could go off drugs cold-cock. So the doctor agreed to accept him for a long-term treatment which would, hopefully, free him of drugs.

The tale has not yet wound down to its finish. The boy is still in treatment, and he's still in swimming. But his influence is spreading. Several other members of the same swim team—all of them hung up with a drug habit—have come under treatment of the same doctor. And the moment of success with the boy will no longer be a swim record. It will be when he realizes that he can stay off speed and "still feel comfortable with himself in his place in society and in athletics."

Case C: involves an athlete of extraordinary hockey skills. Jerry had been a champion in the Silver Skates. In his teens, he grew into a swift, broad-shouldered youth with a magnificant slap shot—"a miniature Bobby Hull." In high school, he was the finest player on his team, fast enough to outskate everybody, strong enough to put in twice as much playing time on the ice as any other player. He was so good that he was one of the very few teen-age hockey players in the United States to be offered a contract by a National Hockey League team.

Jerry took speed on occasion to get up for a game. But his basic problem was in barbiturates—and the basic cause was at home. He lived in an upper middle class suburb but his life was far from serene. His father was an alcoholic and frequently beat his mother. Jerry hated everything about his home life and to escape he began using barbiturates. "You really feel loose," he said. "I feel I was more—like I was more *me*."

Of course the barbiturates affected his hockey. His reaction time became far slower. They also affected his need: He sought more and more of them. "It's harder to stay away from R.D.'s [Red Devils, one of the nicknames for barbiturates] than heroin because the Reds are so available." The R.D.'s slowly came to replace hockey as the motivating force of his life. The result was inevitable. They overcame him. He was hospitalized for "oh-deeing it"—taking an overdose. His case was referred to Dr. Alex Panios, clinical director of the Near North Clinic in Chicago, a man who specializes in the care of young people caught in a drug habit.

Doctor Panios began working with the boy but it was slow going. The youth was in an out of the hospital on several occasions, sometimes for complications. Once he came down with serum hepatitis at a time that he'd taken an overdose of barbiturates. But he had enormous recuperative powers and every time he went off drugs, in the hospital, he wanted to go out and prove himself in hockey. "He got out of the hospital one Thursday night and he was 17 pounds underweight from all he'd been through," says Doctor Panios. "But he insisted on playing hockey the next Sunday night." It was better to let him play hockey than to see him retreat to drug-dependency. All he did that night was score three goals, the "hat trick" in hockey, though he caught a blow in the face that broke his nose and the orbital bone around his eye. "He went on playing for seven minutes after it happened," says Doctor Panios.

These were moments of hope and determination for Jerry. He had the kind of personality that demanded a complete commitment. He threw himself into everything he did, whether it was hockey or the drug-culture. With the help of treatment under Doctor Panios, he began to straighten out. He got a job and began saving his money so that he could have something to live on when he went west to work out with the pros. It helped to have the active interest of the pros to look forward to. It gave Jerry a sense of self-esteem that he'd never enjoyed at home. But the home situation was still deteriorating. His father and mother refused to come in to see Doctor Panios and perhaps get help for their problems. They separated and deliberately maintained a distance from Jerry. It was his uncle—not his father or mother—who kept Doctor Panios alert to changes in the youth when Jerry wasn't under observation at the clinic. And not even he was able to keep up with the boy. At one point last summer, for instance, Jerry was supposed to go to a summer hockey camp for a few weeks—hopefully to get in shape for the autumn workout with his professional team. "But he dropped out," says Doctor Panios. He doesn't know how or where or why. "He just never showed up anyplace he was supposed to be." One Sunday night in August, Doctor Panios got a call from the boy's uncle. Jerry was back in the hospital. Doctor Panios immediately went to the hospital and got the unhappy report. Jerry had indications of an overdose of barbiturates and heroin.

The boy had just passed his 19th birthday. What will happen to him?

"We've got two alternatives," says Doctor Panios. One is to urge the boy to enter a resident treatment center, such as Gateway House in Chicago. In that way, he can, hopefully, piece his life together and re-enter the world on his own terms. "Or we can send him to Lexington"—the federal drug-correction center in Kentucky.

What is to be learned from these cases?

That sports failed as a "sanctuary of the spirit" for these boys. Sports provided an impetus, not an alternative, to drug-taking. They suggest also that even fine athletes can be lured into drug taking. Can it only be a matter of time before the hero-athletes on drugs become models for drug-taking among younger children?

To be sure, there also appeared to be some room for hope and perhaps for corrective action. For it can be said that:

Drug-taking is by no means universal among athletes. In one small liberal arts college—where football is not crucial to the life-style of the students—I was told that only four or five football players are on speed. In a larger school, where football is a high-pressure activity confined to scholarship-athletes, I was told that 35 or 40 percent of the kids are on speed. That would be 25 to 28 athletes. It would also seem to be lower than the most commonly cited percentages for drug-experimentation among the student body at large.

It was not the sport itself that stimulated the athletes into the taking of drugs. It was the conflict and pressures that surround the game—the need to get up nerve to face the game, the belief that certain drugs make you play better, even the need to overcome the uncertainties of how to behave when playing on the road ("you always think maybe you're going to do something *wrong*"). These pressures aggravate the abundant self-doubts of adolescence. They wipe out the exhilaration of playing the game. Adolescence is a difficult period under any circumstances. The teen-age boy has terrible doubts about his social status, his biological drives, his relationship with girls, with his parents, with his peer group. Sports played under intense pressure expands these self-doubts. His failure in a sports situation can be painfully public and desperately self-destructive. To protect himself—his feelings—he may resort to drugs, either to improve his performance or at least not suffer damage to his personal feelings if he doesn't improve his performance. These pressures also are within the control of the coach and the athletic environment of the school.

Most athletes themselves are very aware of drugs and the dangers of taking them. There was no indication that athletes on speed or red-devils escalated to heroin. Their needs are not quite the same as in the drug-escalating group at large. On the other hand, it was quite difficult for them to go off of drugs voluntarily—or to avoid getting started on them. "You can tell an athlete that for every day he uses speed, he loses two or three days off his athletic career and he'll still go ahead and use it," says Randy Webber, a college student (and psychology major) who developed a telephone-for-help drug-rescue service for the North Shore of Chicago. "They're thinking of today—how they play *today*—and not how it's going to affect them in the future."

The significant thing in all these cases is that it was medical help—not their coaches—which led these athletes to counter their drug-habit. Even the boy at Tulane quit for what were essentially medical reasons. He'd been hurt too seriously to continue in sports and without sports he did not feel a need for drugs. Obviously doctors can provide immense help to youngsters already involved in drug-use. But if sports are not to become a marketing device for pushing drugs, the coaches—long before the doctors—will have to take action against the drugs. Preventative action, not curative. That means the coaches will have to come out forcefully on the issue. And that many of them will have to resolve the pertinent question: Is winning—"the only thing"—more important than the health of their players?

It is a matter not simply of coming out against habituating drugs but avoiding indiscriminate use of pain-killing drugs in the top players, simply to get them in the game. For the coach who urges use of the pain-killers in order to win a game—while preaching against player-use of other drugs—is likely to make cynics, and cripples, of the young men in his charge. It is that attitude that persuades young athletes that the value system of their coaches and their coaches' generation is corrupt. That is what inspires alienation of the young and, in some cases, their readiness to drop out through drugs.

Thus the act of denial in sports is not solely the denial of drugs by the young. It is the denial of a reasoned hypocrisy by all those who coach the young. In that way, sports might once again become the activity tha it once was: A sanctuary of the spirit where the young man can find the best that is within him. And prove himself to himself.

APPENDIX 24

An Administrator's View of Use and Misuse of Drugs Among Athletes

(Journal of School Health, March, 1972)

(By James C. Smith, M.A., *Assistant Superintendent of Schools, Kanawha County, Charleston, W. Va.*)

The use and misuse of drugs among athletes could be compared to the illusive dream, "Mission Impossible" or the Braxton County Monster. Most people outside West Virginia have not heard of the Braxton County Monster. He is an unknown something that has stalked the hills of our State for years. No one has ever seen him (or her)—just tracks and evidence of evil doings. It's a myth—I hope!

Kanawha County Schools' encounter with the drug problem has been similar in nature to those experienced in other school systems. However, the percentage of abuse has been lower than in systems of similar size. Although the magnitude of our problem has not been great, the tragedy of each case is heart breaking. These problems have led our school system to develop a policy on drugs.

1. The schools should be given discretionary powers to work with students involved in drug abuse and usage.
2. The schools should design a committee of school personnel such as social workers, nurses, counselors, administrators, concerned teachers and parents, who through training become acquainted with techniques used in working with young people with drug problems.
3. That schools develop guidelines to refer pupils with problems immediately to the school committee.
4. That a central office referral committee be established composed of the health and psychological services directors, the pupil services and secondary school assistant superintendents, and a representative of the school committee. The referral committee will offer Kanawha County Schools services and advise to parents on treatment centers and will communicate with family doctors and other personnel. This committee would, when necessary, take more drastic action, such as informing the police department, or dropping a student from school.

Kanawha County is a county unit school system composed of both rural and urban areas. Charleston has a population of 69.000 and is our largest urban area. It also is known as the "Chemical Center of the World" and has an impressive portion of wealth. The rural sections once were one of the largest coal-producing areas in the east. However, with automation many rural areas are now "ghost towns" inhabited by the very poor. The school system serves an area of many extremes. About 50.000 students attend 11 high schools. 22 junior high schools and 93 elementary schools. Throughout this rather complex system, one encounters almost every problem known in contemporary society.

The community has also come to grips with the drug problem and organized the very active Charleston Drug Counsel. Several steps were taken to determine the extent of drug abuse among athletes. Some of them were:

1. During the spring of the 1970–71 school term, our coaches were asked four questions. (1) Have any of the athletes in your program taken drugs? (2) If so, what action was taken? (3) Do you know of a coach who may have encouraged the use of drugs? (4) What is your opinion of drugs and athletes?
2. A group of high school guidance counselors was asked the same questions.
3. A sampling of students was asked a variation of the same questions.

At the beginning of 1971–72 school term, the same procedure was followed in an attempt to double check the information. The research is not considered one of high validity—just a technique used for the purpose of obtaining information to develop this paper.

Significantly, only two cases were located where drugs were being misused. Two young men had taken amphetamines as a stimulant. These cases are interesting in that the young men had shared their experiences with the school counselor. Their coach, however, was not aware of the misuse of drugs. No bad affects on the players were obvious and both are now playing college football. In both cases the source of the amphetamines was a mother's medicine cabinet. It seems that one player's mother was overweight and a prescription was readily available.

All other coaches and counselors who were interviewed emphatically stated that no misuse of drugs existed among their athletes. Coaches felt that teen-age athletes are endowed with so much physical and emotional energy, that a pep talk by the coach and high school spirit is enough to stimulate peak performance.

An outstanding football player who suffered from a form of epilepsy needed drugs to control his hyperactivity. This is an example of proper drug use. The medicine was administered, of course, at the direction of the player's physician.

High pressure on the coaches is another aspect of the high school athletic program. Some coaches use tranquilizers to help them cope with these pressures.

Student's comments were of great interest. The so-called "straight kids" said drug misuse among school heroes didn't exist. They seemed surprised that anyone would ask.

Comments from young people known to misuse drugs were of a different nature. A frequent statement was . . . I wouldn't say anything to another student if he did use drugs. Another was: The athletes are a group of "squares" and not "with it!" One more philosophical comment came from a young man who said, "The number you think of as drug users can be multiplied by 10 and you still won't be too close to an actual count." And with this statement the mystery of how many, how much and what kind goes on . . .

It was with pleasure that very little tangible evidence of drug misuse could be found among the approximately 3,000 athletes in Kanawha County Schools.

This low degree of abuse can be attributed to many things: (1) A fine coaching staff, (2) A prevailing attitude that athletes don't misuse drugs. Most West Virginians do not accept the misuse (with the exception of alcohol). Perhaps this is behind the times, as West Virginia is so often accused. Then for once "being behind" is a blessing. (3) Athletes do not seem to socially fit into the drug culture of Charleston, and (4) Active involvement of an athlete may reduce the need for drug usage.

In conclusion, the school administrator is faced with a problem of a multitude of unknowns. The most difficult is that of why a young student turns to drugs and what programs can be offered to fill the void in life. Perhaps the athletic program is a good example. On the other hand, the athletic program may simply exclude the student who is a potential misuser of drugs.

The lack of hard facts is another problem. During the research for this paper only two who had misused drugs could be absolutely identified. Thus, the problem is similar to that of the Braxton County Monster and will continue to present a challenge to school administrators for years to come.

APPENDIX 25

DRUG USE AND ABUSE IN ATHLETICS

(Amateur Athlete, May, 1971)

(By Dr. John Boyer)

This is a very important and a very timely subject as we all know, particularly in a culture such as ours in which drugs seem to be playing an increasingly important role. Much of the present concern with drugs in athletics stems from the increasing use of ergogenic steroids, antifatigue, and stimulant drugs, and the use of both psychic energizers and tranquilizers. This is called sports doping and can be defined as the medically unsupervised use of prescription drugs by athletes. I do not consider the excessive use of vitamins the same as doping even though there is a potential hazard with overuse of certain of the oil soluble vitamins. The real danger in sports doping is with the prescription drugs that chemically alter normal body processes. The first recorded instance of doping was in the 1860's when a Danish cyclist was found to have used ether sprinkled on a sugar cube.

The intense competition of the athelete, which often leads to a lucrative career in professional sports, has understandably made him turn to any and all modalities which would help to improve his performance. Drug use is one of these modalities. It is our purpose to review the use of drugs where the agent is both indicated and contraindicated. We will also attempt to determine where the responsibility lies in the control of drugs in the athletic world and what the solutions are to this problem.

To begin with let us examine briefly the normal and usual indications for drug use in the athletic world. Let us remind ourselves at the outset that the vast bulk of drugs used in sports is both honorable and defensible. They are used to support a sound sports program. Drugs have basically three purposes: (1) to cure; (2) to control; and (3) to comfort. The use of penicillin after the established diagnosis of a streptococcic pharyngitis is an illustration of the first purpose, to cure. The use of insulin for the diabetic athlete is an illustration of the second category, to control. The use of aspirin or other analgesics for pain is an example of the third category, to comfort. These three purposes have clinical justification, i.e., the drug is given in an effort to produce a particular benefit in the treatment of a particular clincial condition. They provide relief to the ill or injured athlete and aid his recovery. If they are used to allow the athlete to continue competition in spite of the illness or injury, this represents a grave example of abuse of drugs.

With the role of competitive athletics so firmly established in our country, how can the medical profession best control drugs used in athletics in a meaningful way? Perhaps more basic to this whole problem is how best can everyone involved with the athlete exert meaningful control throughout all of athletic performance. Above all, there must be no deviation from two all important basic principles that must underlie each and every medical decision regarding an athlete. The first principle is that no athlete can be permitted to risk permanent disability by masking a symptom with drugs. The second principle is that drugs should be used only where a clear therapeutic indication exists, and not to alter the normal physiologic processes. This is worth repeating: Drugs should not be used to mask a symptom such as pain and leave the underlying cause of the symptom ignored. And drugs should not be used to alter normal body functions. To employ these principles honestly and universally, without modification, must be the constant objective for all those concerned with the health of the athlete. This includes the team physician, the trainer, the coach and the athlete himself.

Let us now review some of the drugs that are used for the maintenance of health and see if there are any effects that are significantly in the performance of athletic endeavor. Acute medical problems, such as infectious mononucleosis, pneumonia, acute nephritis, etc will probably prevent the candidate from reporting for training. Such illnesses may be difficult to detect once they have run their course. Hover, accurate appraisal of recent acute medical illness is an absolute necessity because such a weakened candidate cannot hope to equal his healthier compatriots and must suffer injury sooner or later. Thus post-infectious fatigue and lethargy are often present in the post-infectious state. In these instances supplemental oral vitamin therapy may aid in the recovery from a debilitating illness. However, massive vitamin therapy sometimes given by injection does not appreciably speed up the convalescent period and is not without potential harm. These same symptoms of fatigue are often improved by the ingestion of large amounts of caffeine. The athlete who takes large amounts of cola drink may be doing so because of the lift he obtains from the 55 mg. of caffeine which are present in the average bottle of cola.

Large coffee consumption will also do the same thing, for there are about 150 mg. of caffeine in the average cup of coffee. The appeal of these beverages lies primarily in their central stimulating effect and their tendency to counteract feelings of fatigue. By circumstance, the athlete recovering from an acute, infectious illness with post-infectious fatigue and lethargy way feel he is stimulated enough to perform well in athletic endeavors if he has several cups of coffee or two or three bottles of coke before practice time. The lift that is felt by the use of these caffeine-containing beverages may become an habitual thing. Large amounts of these can produce symptoms of caffeine overstimulation manifested by headache, cardiac arrythmias, and distressing digestive symptoms. It is important then to recognize that these agents which are part of our dietary culture can actually become health hazards when used to excess. This does not constitute doping in the true sense of the definition but it is abuse of nonprescription stimulants.

Vitamins are other agents which are used to maintain health, but which can become potential health hazards when used in excess by the athlete. The gross abuse of vitamins and minerals is now quite common in the athletic field. Excessive use of these agents is often encouraged by trainers and coaches. Although there is a general lack of danger with large amounts of vitamin therapy, it is not without risk. This is particularly true when parenteral injections of large amounts of vitamins, particularly thiamin, is being used. Deaths have been attributed to excess vitamin intake by the intravenous route. It is of interest in this regard and it has been reported that in the Mexico City Olympics athletes were getting injections of 1,000 micrograms of vitamin B12 an hour before their events. This would be enough to maintain an individual with pernicious anemia in complete remission for a month. Prolonged ingestion of excessive amounts of vitamin A and D are capable of potentiating serious bone and liver disturbances. The combination of large amounts of vitamin D, plus prolonged exposure to ultraviolet light, markedly increases the hazard of vitamin D intoxication. Phosphate compounds or oral calcium in excessive amounts can lead to the development of renal calculi in the susceptible athlete. Inorganic phosphates, massive amounts of vitamin C (up to 10,000 mg. a day) and various "Gatorade" type solutions are passed out by coaches and trainers without knowledge of the chemistry and pharmacology of these substances. The excessive use of vitamins and minerals is not justified, and studies of performance improvement as a consequence of increased vitamin intake alone are very difficult studies to control and very difficult studies to accept. Again, this shows the abuse of drugs normally used for health maintenance.

One of the commonest occupational hazards of athletic competition is pain. Two general kinds of anti-pain drugs are available: local anesthetics such as procaine and ethyl chloride spray, and those that act on the central nervous system such as codeine. Problems can be associated with use of them all: continuous use of procaine hydrochloride, for example, can produce side effects ranging from excitation to coma to convulsions, as well as allergic reactions. With potent narcotic agents, there is danger of developing tolerance to their pain-relieving properties, so that larger and larger quantities are required to suppress pain. They also have side effects such as pupillary constriction with possible interference of vision, contraction of bronchial smooth muscle with possible respiratory difficulties, and finally constipation.

The use of anti-inflammatory compounds such as cortisone, hydro-cortisone and phenylbutazone is not without danger. These drugs are often injected into the synovial space of an injured joint to relieve swelling, inflammation and pain.

The biggest danger arises because the inflammation is relieved but the cause of the inflammation is not. Thus, the athlete must be cautioned to limit activity of the treated joint even though there is distinct symptomatic relief, as the inflammation remains active and use of the joint may accelerate cartilage deterioration. Cortisone can lead to the gradual degeneration of bone structure. Thus, the continued use of cortisone to relieve pain and swelling in a pitcher's elbow while he continues to pitch, may lead to degeneration of the elbow with crippling results. The same applies to the fullback's knee.

There is a high incidence of toxic reactions to phenylbutazone and promiscuous use of any of these compounds to keep an athlete in competition is sports doping.

Many athletes desire anti-spasmodic and tranquilizing drugs to control pregame jitters and nausea. The inability of the athlete to deal with pressure should not automatically make him eligible for a tranquilizer. The same principle applies to those athletes taking pep pills: they are attempting to derive something from the use of drugs which they do not think they naurally have.

Oversedation during competition is a hazard of the tranquilizing drugs, with impairment of athletic ability. Many preparations, particularly the anti-spasmodics, contain ingredients that may cause blurred vision. In addition, potentially dangerous drug interactions involving the central nervous system may develop when more than one of these compounds is administered simultaneously. The use of these drugs is gross sports doping.

The use of anorexics to help an athlete lose weight to make a lower weight class should be mentioned only to be condemned. In spite of the fact that these drugs are widely used in private medicine (the Physician's Desk Reference lists over 60 anorectic agents) they have no place in the health maintenance of the athlete. The common constituent of all of these drugs is either an amphetamine or a sympathomimetic amine. These are incompatible with good medical care of the athlete.

The most common drug associated with doping in sports is the amphetamine or "pep pill" that is supposed to enhance performance by delaying fatigue. It is a powerful central nervous system stimulant. It takes only 5 to 10 mg. to achieve this. There is now ample evidence that it does not improve athletic performance. The side effects of these drugs tend to decrease performance. They cause vasoconstriction, increased blood pressure and heart rate at rest, increased muscle tension and changes in the pupillary reflex. All of these are the opposite of what the athlete needs for top performance. Why then, are the amphetamines used?

Research on the amphetamines has shown that a person's judgment can be impaired, in the sense that he over-estimates significantly the beneficial effect of the drug on his performance. This finding underlies the common impression among amphetamine users that the drug is helpful, an impression that interferes with educational programs against such use.

While considerable attention has been given to amphetamines, interest in the androgenic-anabolic steroids (synthetic male sex hormones) has been increasing in the athletic setting. They are being taken by some athletes with the intent of gaining weight for sports where weight is considered an advantage. As brought out in a statement from the AMA Committee on the Medical Aspects of Sports back in 1965, these drugs are categorically condemned for the athlete, their effects being far more subtle and insidious than those associated with pep pills. Even under clinically justified conditions and close medical management, these drugs are so potent and have demonstrated such undersirable side effects that their use is advised only after special consultation. Yet the muscular beachboys started dabbling with these drugs in the early 1960's and it eventually spread to athletes, first to weight men in field events and then to some football linemen and basketball players. From grade school through the junior high school level, athletes receiving the steroids definitely risk stunted growth because of premature closing of long bone growth centers. They also may experience a markedly supressed male hormone production by the developing testes.

For the adult or postpubertal athlete, the growth and development factors no longer apply. One of the drugs' side effects to which they are vulnerable is a decreased libido. The size and function of the testicles are known to revert to the prepubertal stage during extended administration of these steroids.

Finally, for those who are not impressed even by these effects, a controlled study in Southern California between subjects who received an anabolic steroid and those who received a placebo, revealed no significant differences with respect to strength, motor performance, work capacity, and other such measurements taken. Some clinicians are attributing any increased weight in the normal male from steroid use to increased appetite or water retention or both.

All known and unknown hazards from amphetamine or anabolic steroid use, consequently, are apparently being risked for nothing. There are less heroic and more honorable means of trying to increase one's performance.

In conclusion, it is important to tell it the way it really is to athletes. The drug dabbling, even with those agents which are used for the maintenance of health, are far more apt to erode than to enhance the normal capabilities of the athlete. Drugs should be discussed frankly, honestly and completely open with all athletes. It should be part of the same counseling that is given athletes on alcohol, tobacco, sportsmanship and other practices, during the young athlete's formative years. Certainly to ignore the problem is not the solution. The education of the athlete and all those directly involved with his training is the only possible solution. To turn to the law for the regulation and control of drugs in sports is a hazard in itself and seems out of keeping with the high standards of athletic endeavor. What is needed in sports doping is not more laws but more understanding, more education and better dissemination of knowledge.

APPENDIX 26

FELLOWSHIP OF CHRISTIAN ATHLETES,
Kansas City, Mo., June 15, 1973.

Mr. JOHN RECTOR,
Senate Annex,
Washington, D.C.

DEAR JOHN: It was a pleasure speaking with you on the phone today. We certainly are available to be of any assistance possible in the area of drugs and athletics.

I a menclosing copies of the February and March 1972 issues of the *Christian Athlete*, official publication of the Fellowship of Christian Athletes. I call your attention to the two part series on "drugs in sports", page one in the February issue and page sixteen in the March issue. These could be of assistance.

Also encolsed is an article by Dr. Donald L. Cooper from Oklahoma State University. Our people consider him tops in the field. He has attended our National Conference program.

We will stay alert for other resources for the Senate Committee and we are also personaliy available, should the need arise.

Very sincerely,

JOHN ERICKSON.

FELLOWSHIP OF CHRISTIAN ATHLETES—BOARD OF TRUSTEES, MAY 1973

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DRUGS AND THE ATHLETE

(By Donald L. Cooper, M.D.)

"Normal" is the best there is. Drugs of any type should only be used in disease, deficiency, or injury states. Any other use of drugs

> is only a form of internal pollution, and there is no valid evidence that any drug ever improved any athlete's performance. The real difficulty is that many drugs make people feel they are better, but it is an illusion. This myth is perpetuated by the limited testing occasionally done on only the winners. When all of the contestants have been tested, it has been found that more of the losers dabble in the drug area.

"Normal" is the best there is. Somewhere in the educational process our young people and our young athletes have received a very poor background in health education. We have allowed this important part of education to be forced further and further out of the mainstream of teaching until we now have many people with little or no appreciation of what is a truly wonderful creation, namely, the normal human body. In a sense we seem to have lost our appreciation of normalcy when in reality, normal is the best. As physicians we should concentrate our efforts toward returning our patients to normal. There seems to be a notion that the commonly used terms such as "miracle drugs," "wonder drugs," or "super drugs" can improve upon normal. If we had better health education, this false concept and myth would not be so prevalent.

There are only three basic areas where drugs should be used, whether the patient is an athlete or not. These are disease, deficiency, or injury, in which conditions drugs may be lifesaving as well as comforting and reassuring to both the patient and the physician. The general area of therapeutic drug usage will not be discussed in this article.

As in most areas of medicine, what is considered therapeutic and what is not can be debated, but this article will deal mainly with the situations where a disease, deficiency, or injury does not exist. The nontherapeutic use of drugs is unwise and has many of the problems of "recreational" drugs. Part of this almost total preoccupation with drugs in recent years may be attributed to many of us in the older generation as well as to the influence of television. By the time our children have reached the age of 20 years, it is estimated they have watched approximately 15,000 hours of television. During this time they will have seen numerous commercials telling them that drugs can stop their headaches, relieve their joint pains, calm their stomach, improve their bowel function, quiet their nerves, clear their complexions, and improve their ability to perform work. They grow up believing drugs can provide the answers to most of life's problems. In a sense, society has created this culture.

This is no easy problem to solve, but I am firmly convinced that some of the drug problems seen in athletes are only a reflection of the drug problems of our society. In trying to approach this problem logically in athletes, as well as in our general population, there are some important concepts to teach. Everyone today is justifiably concerned with pollution and ecology. This is commendable since our lakes, streams, air, and land are seriously threatened and in some areas many have already given up "the ghost." If young people can be made to realize that the ingestion of any nontherapeutic drug other than for a disease deficiency state, or injury is a form of "internal pollution," they might get the idea.

The use of drugs in sports is not new. It has been stated that the first recorded death from drug usage in sports occurred in the 1890s in a British cyclist who was using ephedrine to improve his performance. It seems that we are always "reaching out" for a "gimmick" or "an easy way" or that "special something extra." There are no shortcuts to an excellent performance, but apparently it is man's nature to keep striving for the possibility of securing some help outside himself.

The number and variety of drugs experimented with by athletes over the years is staggering. The frequency of deaths associated with some of these chemicals does not seem to deter the curious and the gimmick seekers. A partial list of some of the drugs experimented with would include caffeine, camphor, cocaine, tranquilizers, nikethamide, strychnine, pentylenetetrazol, ether, digitalis, nicotinylalcohol tartrate, ephedrine, nicotine nitroglycerin, alcohol, amphetamine sulfate, epinephrine, nitrates, cytochrome C, thiocyanate veratrum alkaloids, rauwolfia serpentina, hydralazine, potassium, calcium, magnesium, phosphorus, lecithin, phosphates, citrates, bicarbonates, aspartic acid, gelatin, methylphenidate hydrochloride, barbiturates, amphetamines and androgenic-anabolic steroids. The latter two drug families are the ones causing most concern in athletics. The chemistry laboratories and the drug developers are bringing to the market new substances almost daily. It can be expected that there will be other "quests" with newer substances as we struggle to help the aspiring young athlete learn to depend only upon himself for his performance and his development. One real problem is that to my knowledge, in all of the literature there is no good scientific evidence that any of these substances really helps the athletic performance of anyone.

Smith and Beecher[1] claimed that amphetamines were able to provide a slight increase of 1% to 4% on certain endeavors. However, they had poorly controlled standards of timing and measurement. They did use a double-blind technique as far as medications were concerned, but some of the runners in the study timed themselves, and all of the shotput distances were based on eye estimations only and no exact measurements were actually taken. Foltz et al,[2] Golding and Barnard,[3] Karpovich et al,[4] Margaria et al,[5] and Haldi and Wynn,[6] all using much better controls on measurements and timing, were not able to show improvement in the performance of athletes from the same drugs.

Amphetamines are related to epinephrine in some of their actions and can in fact also have a definite effect on subjectivity. Almost invariably, if you ask a person who has used them, he states that he felt better and felt sure he would probably do better. However, so much of what a person does is controlled by his "psychic input." One problem was all so-called "scientific experiments" is that they cannot duplicate the natural excitation and valid stimulation of real competition. A good athlete has the remarkable ability to "psych himself up" at the proper time. One real problem with using drugs to psych yourself up is that you do not have the control and timing over yourself that you may need. If we just stop to think for one minute, we realize what a great influence our mind can have on our body in an excited state. For instance, I imagine many have read about the 98-lb woman who ran out of her house to discover a car had fallen off some cinder blocks and her son was being crushed beneath the car. She reached down and lifted the 4,000-lb car off her son so that some friends could drag him out. She did have several compression fractures of her vertebrae, but I can assure you she was not using any artificial drugs to get the psychic input necessary to do what she realized had to be done to save her son. Stories of farmers lifting tractors by themselves off their loved ones have also occurred under similar stress situations. In all of athletics, this is a difficult measure to take. I had the pleasure of watching Bob Beaman psych himself up at the 1968 Olympics and see him leap 29 feet 2½ inches in the long jump. No man had even made a long jump of 28 feet. In fact it was such a super-human effort you would have to say it could not happen, but it did! There were many factors involved, but the most important factor was still the emotional concentration brought to bear at that specific moment. Beaman had not come close to this jump before, or since. A look at the problem of running a sub-four-minute mile that had eluded man for centuries can be seen to be related to this same psychological effect. After Roger Bannister accomplished the feat, it became almost commonplace and today is not looked upon as any great achievement.

Throughout athletic records we can see this almost never-ending spiral of better and better performances. Without a doubt many factors are involved, but certainly the psychological one is always present. Nevertheless, it remains elusive to quantitate or measure.

One of the most interesting studies that is closely related to the area we are discussing is reported to be going on in France at the present time and has been in progress for approximately the past five years. It seems the horse racing people are attempting to determine just what, if any, influence drugs can have on thoroughbred race horses. For the past five years, every Wednesday, they have tried almost all of the drugs previously accused of being used in the doping of horses. They have been using at least ten thoroughbred race horses that have been run in every imaginable way—with drugs, without drugs, rested, fatigued, warmed up, not warmed up. They have tried to measure every parameter possible. They have not been able to demonstrate in any way that any drug can make a horse run faster or consistently improve a horse's performance. This does touch on the area of dope testing in horse racing. It appears that a great deal of what is passed off as good scientific control is many times only a move to soothe the gambling public and to attempt to give some scientific credibility to the testing of race horses! It seems to be a paradoxical situation in that there is no good scientific evidence anywhere that drugs can make a horse or human perform any better, but because of the myth that has grown up around the concept, people believe they have to make a gesture at controlling something that may not even exist. The danger in this area is that drugs can mask fatigue, and a person or a horse may run past normal capacity, which, when combined with heat buildup, may cause circulatory failure. This does not mean the person or the horse, for that matter, can go any faster.

All of the studies have shown delays in pulse and respiratory recovery times after amphetamine usage. If indulged in regularly, these drugs can become addictive. Amphetamines also have the capacity for a fairly rapid tachyphylaxis. Often, to get a continued response, the person has a tendency to take increasingly larger doses. This type of regimen has been followed by varying degrees of agitated, aggressive, sometimes paranoid behavior. In very sensitive people this type of reaction can also occur with fairly low doses. One former professional football player stated he had used "bennies" only in two games and that in both of these games he had been thrown out for overaggressive and overzealous rough play. He thought at the time that he was the greatest defensive linebacker ever, but on grading the films it was mostly a subjective feeling on his part because he was not playing that well! In fact, part of his aggression may have been trying to make up a little late what he would normally have been reacting to earlier if he had not been taking the drugs. He stated after these experiences that he wanted no part of the so-called "pep pill" business. Jim Bouton in his book, *Ball Four*, made the statement that he felt as many as 40% of major league ball players used bennies or "greenies." He also relates the story of a pitcher who, when approached by the manger coming to the mound, stated that he never felt better and was throwing as well as anyone had ever thrown. Subjectively he felt he was "king of the mountain." The manager informed him his last three pitches had been hit for home runs, so he was on his way to the showers! I suppose this is the main reason it is so difficult to control his problem in some areas. The athletes are depending on the way they feel subjectively about themselves and their abilities so they actually do believe that they are better, when in reality their judgment is impaired to some extent and they are in more of an illusory state than in a reality state. Most drugs do in fact work on our pleasure centers and certainly the drugs that would titillate or stimulate our ego area would subjectively cause a pleasurable feeling.

Who does not like to have his ego boosted? An interesting new theory regarding the action of this type of drug was expounded by Dr. Hardin Jones, Professor of Physiology at the University of California in Berkeley. The main thrust of Dr. Jones' concept is that most of the drugs used recreationally by human beings act on some of the various sensual or pleasure centers of the central nervous systems.[7] It has been estimated by various neurophysiologists that humans have at least 35 different pleasure areas and that when drugs are taken, they give a titillation or stimulus to these areas. In talking about amphetamines it is stated that they seem to act on the pleasure areas associated with "preorgasmic" pleasure and obviously make the person feel good. This also could explain to some extent why this family of drugs is used in diet control. Most people eat for psychological reasons and to titillate their pleasure centers with food and oral activity. If you give a drug that titillates these same or closely related pleasure centers, then you do not feel the "need to eat" as you did without the drug. Dr. Thaddeus Mann of the University of Cambridge, England, evolved the same general concept at about the same time as Dr. Jones developed his ideas.

The combination of amphetamines with barbiturates has also enjoyed a certain amount of popularity among some athletes and is often referred to as a greenie. The combination apparently gets the amphetamine titillation to the pleasure and ego support centers, but the presence of barbiturates alleviates some of the nervousness and shakiness felt as side effects of the amphetamines alone. As far as any increased ability or efficiency is concerned, the performance is no better and in many instances the athlete actually performs worse. Subjectively he will tell you he feels his performance is better.

One of the most detailed studies of the effects of amphetamines on the central nervous system was done in 1966 by Talland and Quarton.[8] They were able to demonstrate that for any benefit to result from drug usage, however slight, the task had to be very simple, and the subject had to be habituated to the simple task and to some extent to the drug. We can see that no complicated athletic contest can be reduced to a simple task. Also, it is almost impossible to have habituation to most contests since they change with almost unique play or play situation. I am sure no one wants addicted or habituated players on any athletic squad.

In spite of some adverse statements by former disgruntled athletes, I do not think the problem of amphetamine usage is as widespread in high schools and colleges as these athletes may lead you to believe. The amount of drug usage in professional ranks is probably exaggerated. It may be the unsound last-ditch effort of certain fading players to try to recharge themselves artificially before they are cut or released, but if so, it is only a sad illusion they are creating for themselves.

Many people honestly believe that a drug detection and monitoring program should be instituted in all athletic events as is supposedly done in horse racing. They must realize that a reliable scientific checking system is still expensive and time consuming. For instance, dealing only with the problem of urine collection where urine is the biological fluid of choice for monitoring, facilities and staff must be available to collect two samples and to label, seal, and code them properly. One sample should be given to the athlete, and absolute control should be kept over the study sample until tested in a laboratory capable of determining minute amounts of the various drugs. Most laboratories are geared only for determination of fairly large amounts of drugs, as in poisonings or suicides. Gas chromatography, electrophoresis, and crystallography can be used for analysis, but these must be well controlled. If positive results are found, the person whose urine tested positive must be informed so that he can take his half of the specimen to a laboratory of his choice.

A laboratory can easily report normal findings, but as a result some interesting and troublesome medico-legal problems may arise. Whenever testing is to be considered or done, it should be done on all participants. For, when only winners are tested, the implication arises that there is some relationship between winning and doping, while in reality the opposite has been found to be true. In Winnipeg in 1967, all of the cyclists were tested at a cost of about $50,000. This was a scientifically controlled procedure as described above, and it was not until they tested the later finishers that they began to find any evidence of drug usage. None of the first six finishers had apparently been taking drugs, but at least six losers showed evidence of drug usage. At Delaware State during the fall of 1971, the football team was tested, and 13 members of the squad were removed because evidence of drug usage was found in their urine. The week before the testing was done Delaware State lost 52 to 0! Their record this past fall was also poor. In France and Italy, I have been told, a similar testing was done on races in 1968 and 1969. The same conclusions were reached as those in Winnipeg. None of the winners had used drugs, but several of the later finishers or losers had been apparently dabbling in drugs. This is certainly some criticism that could be leveled at the Olympic policy of testing only random selected winners. It would be preferable to test all participants in random selected events or better yet to test all participants in all events. Needless to say, this would be expensive if done properly.

Let us hope that as sophisticated techniques in automated microtesting are developed in the next few years, they will be applied in this area, if those on the governing boards believe they are worthwhile. Again, we have the paradoxical problem that we should be testing for the benefit of the person and not to withhold the illusory benefits of drug usage to any athlete.

Another group of drugs misused and abused by many athletes today is the androgenic-anabolic steroids. It has been stated that 80% of weigth lifters, shot-putters, discus throwers, and javelin throwers are using these substances. This is difficult to validate, but usually where there is smoke, there is fire! This is a complicated problem to deal with. The human body has at least 18 known steroids, and the total interrelated actions of all these hormones is not fully understood. When a person takes a synthetic steroid of any type into his normal body, some confusion is certain to be created in the checks and balance that exist when these hormones operate in a normal state with each other. The problem is further compounded by the fact that many of these people, in their zeal, will take 5, 10, or 15 times the normal doses recommended by the manufacturers or the pharmacologists. No one, to my knowledge, has done research using these massive doses, and they certainly cannot be blamed considering the possible medico-legal problem of such research. Fowler et al[9] in their study at UCLA in 1965, were unable to demonstrate any increased strength, motor performance vital capacity, and physical work capacity in a good, scientific, double-blind, There was some weight gain correlated with use of the active drug, but most of this was belived to be due to the fluid retention that is a common finding with the use of steroids in humans ,and is a result of the altered electrolyte balance and sodium retention. Some studies seemed to show growth in strength and size but they were, in general, not double-blind and made it very difficult to evaluate the "psychological input." One common denominator in Fowler's study for increased strength was in direct relationship to how hard the man worked in the weight room. No one will question the observed fact that a muscle will hypertrophy in direct proportion to how much it is overloaded.

There are some potential dangers to certain people who may be adversely affected by these extra steroid hormones in their systems. Boys may develop premature closure of the epiphyseal plates in their long bones. In other words, the 190.5-cm (6 foot 3 inch) high school sophomore who weighs 81.36 kg (180 lb) and wants to weigh 99.4 kg (220 lb) may think he is going to help himself by taking these androgenic-anabolic steroids. In fact, he may shut down his epiphyseal growth plates prematurely and never become the 198.1-cm (6 foot 6 inch), 113-kg (250-lb) size he would have been if "mother nature" had not been interfered with. Also, many of these young men continue to grow to the age of 20 or 21, and almost always, with a good weight program, they can fill out and gain the muscular weight that makes them more effective athletes. According to Fowler's[10] excellent resume on almost all of the supposed ergogenic substances, to date there is no pure anabolic steroid available. All of the so-called anabolic steroid hormones have some androgenic or testosterone effects. These have been associated with testicular atrophy, loss of libido, and on rare occasions, prostatic hypertrophy. If a young person might have a hormone-sensitive tumor, the increased amount of steroid may spur it on to more rapid and dangerous growth. Some people have been reported to have had a form of chemical hepatitis as the liver apparently cannot metabolize all the extra steroid hormone in the system. The one fact that young people and physicians should not forget is that no one knows what the long-term effects of these steroids can be. We in the medical and scientific professions have a tendency to create the impression with the lay public that we know more than we really do. There are so many unknown factors and possible serious consequences that to use these powerful substances in apparently normal healthy boys seems almost horrendous.

We need to be more honest with ourselves and with our patients and to overcome our reluctance to point out the potential dangers and unknowns for this type of dabbling in drugs. As an example of how little we know, we could point out that to this day all of the scientific research has not been able to show how aspirin works! Several years ago, one theory postulated that in some way aspirin bound the copper ion and returned it to the cell from the extracellular space, by which mechanism pain was relieved and elevated temperatures lowered. Recently we have heard the theory that aspirin is related to the prostaglandins and works through them. These are only theories; the fact is that no one knows. The problem can be illustrated to some extent by the story of the 15-watt light bulb in a dark auditorium. Let the light emitted by this 15-watt bulb represent the known information about a subject and the circumference of darkness around this small "ball of light" represent what is not known. Now, if by research and hard work you increase your knowledge and replace the 15-watt bulb with a 150-watt bulb, your "ball of light" has certainly increased, but look what has happened to the circumference of darkness and look at the size of that which is not known now. We see here one of the paradoxical effects which is probably one of the basic truths recurring in all human endeavors. These paradoxical situations are true of so much of life.

Even though they are not considered drugs in the sense of stimulants or central nervous system titillators, vitamins need to be mentioned as another subject of the "great drug myths." We must remember that vitamins act primarily as catalytic agents and are not metabolized. If a person eats a balanced diet of fresh, well-prepared food, he is getting all the vitamins his body can use. If there is some question on the diet, I am sure a one-a-day type multiple vitamin and mineral tablet will not do any harm.

On the other hand, the use of any amount of vitamins has never been shown to increase athletic performance in any way when evaluated in a double-blind study. With fat-soluble vitamins, there is a danger of overdose, especially in the younger age groups. The water-soluble vitamins are simply excreted in the urine, and it is primarily the B-complex vitamins that account for the bright yellow color in the urine of those who take excess vitamins. There are many salesmen in this country and many gullible people who are victimized financially by vitamin "pushers." Americans excrete the most expensive urine in the world because it is loaded with so many vitamins! Presently, some interesting studies on vitamin E are being carried out that will need review and analysis. Statements in European studies seem to show that vitamin E does help in oxygenation at the cellular level. Research in certain centers in the United States indicates that vitamin E seems to act as a "cellular lubricant" and possibly in this way reduces wear and tear between cells and possibly facilitates oxygen exchange. This is difficult to validate or to relate to athletic performance.

Let us keep in mind that knowledge does not necessarily cause a change in behavior. This seems to be one of the big problems encountered in education on drug abuse. One excellent example is cigarette smoking. The evidence of its detrimental effects on health is overwhelming and most people are fully aware of it; yet, cigarette sales seem to show that knowledge has not had a great effect on changing behavior. As stated earlier, it may be that we need to improve health education programs in our grade schools during the formative years rather than try to educate teen-agers and adults. It is tragic that health education has continued to receive low priority in the educational process.

Let us hope that all who come in contact with young athletes will do everything in their power to influence these young people to remember that hard work, self-discipline, practice, and sacrafice are necessary for success in athletics. Chemical "shortcuts" are not a substitute, and many possible adverse results await those trying to improve chemically that which cannot be improved, namely, normalcy.

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The Christian Athlete—The Jock and the Junkie

DRUGS IN SPORTS

It all may have started years ago when a trainer surreptitiously jabbed a needle into his horse and during the race discovered—presto!—the horse ran faster. Sales of hypodermic needles increased markedly.

Drugs were once primarily associated with horse racing or deranged bullfighters but not mainstream athletics. Today racing is several furlongs ahead of most other sports in curbing drug abuse. In fact, if a nag is even a drug suspect it is kept stalled while across the playing fields of America run men and boys who have popped and stuck their bodies full of painkillers, "uppers" and harder drugs.

And whoever heard of a thoroughbred at a pot party? We wish the same could be said for athletes at even the junior high level.

The fact of drug abuse in athletics is not debatable. The extent of the drug abuse is.

Bil Gilbert wrote in Sports Illustrated, "Athletes today take an extraordinary variety and quantity of drugs. They take them for dubious purposes; they take them in a situation of debatable morality; they take them under conditions that range from experimental to hazardous to fatal. Such use of drugs is far from new, but the increase over the last ten years is likely to become a major athletic scandal--one that could shake public confidence in many sports . . . There are other factors tending to destroy sport: too much money, too much pressure, too much emphasis. The total influence of them all is to fix games, to remove the fundamental drama of sports by dehumanizing it. Short of slipping robots into the lineup, the use of drugs is the most dehumanizing practice of them all."

At the other extreme, if you talk with some athletic participants, coaches or administrators about the drug problem—for athletic or social use—you receive either a vacant stare or an incredulous look as if this might be true on the moon or farther out in the galaxy but certainly not in the good ole USA.

There is a drug problem in sports. To help determine its proportions it seemed the best source would be the participants themselves. So we surveyed 200 high school and college athletes representing a geographic spread of states and a wide range of sports. We did not include the "play for pay" boys because the subject of drugs in pro sports has already been the center of ample discussion and controversy.

Any survey is subject to scrutiny and question. Some of the forms were hurriedly and minimally filled out. But this overview should provide additional information with which to combat a problem that everyone in sports must begin to grapple with much more realistically.

Half of the survey follows. The second half will appear in the March Christian Athlete.

200 HIGH SCHOOL AND COLLEGE ATHLETES REPORT ON DRUG USAGE IN THEIR WORLD

Question. Are drugs a real problem in your community?

"Yes" was the indication of 110 athletes (55 percent) while 81 said "no" and 9 gave such replies as "getting to be"; "to some extent"; 'don't think so"; "a little problem"; and "slight."

A number responded "no" because of the "real" qualification. They indicated drugs were a problem but not of serious proportions. Conversely, some affirmative statements were undoubtedly based on hearsay. One athlete said, "Drugs are a definite problem from what I've heard, but I haven't any firsthand knowledge of it." How much of the "yes" answer that was based on fact or rumor is difficult to ascertain.

The athletes manifested fluctuating degrees of interest in the drug issue. A college gridder commented; "I don't concern myself with the problem," while a high school football player said, "A lot of people are on drugs but I wouldn't say it's a problem." The situation was taken much on drugs but I wouldn't say it's a problem." The situation was taken much more seriously by others. A collegiate soccer competitor stated, "Even seventh graders in our town are on drugs." An Arkansas high school football stated, "It's a serious matter if only one person is taking drugs."

Question. Have you ever taken pep pills or stimulants before a game? If so, what was the result?

Of the 200 athletes surveyed, 191 would refute the premise that drugs are any sort of personal problem within the athletic environment. Only nine indicated that they had used "restorative" (painkiller) or "additive" (to stimulate performance beyond natural limits) drugs.

Of the nine, however, only one indicated a bad experience. A Kansas high school performer said, "The pills got me all stiff and bent out of shape."

The other eight claimed they benefited from the pills or stimulants. The comments included: "I didn't tire out as fast in the game, but I was tired later when it wore off"; "Great"; "The pills gave me a big lift" (college baseball player). A collegiate gridder stated, "It was a big psychological boost. It kept the adrenalin flowing; I never got tired."

Most of the "no" response was without qualification. Several athletes added comments: "God gave us ability that cannot be increased by drugs" (prep cager); "No, I don't believe in false gods"; "I was high enough on Jesus"; "No, although sometimes I wished I had more energy" (high school football players in Oregon and Iowa).

One young man lamented, "No—and we lost."

Question. Have you ever taken drugs of any kind? What were they and what was your reason for using them?

Social use of drugs was double the utilization for athletic purposes. However, while 55 percent claim a drug problem in their community, the athlete is apparently not a major part of it. Ten percent (19 to 200 athletes) said they had used drugs.

Several used drugs to kill pain, another to stay awake studying for tests. For most the reasons weren't as noble. Curiosity prompted several to try marijuana. One said, "I wasn't trying to escape anything. I just wanted to try some grass." A California prep gridder said he'd broken up with his girl and "smoked some grass with another girl just to see what it was like."

Peer group pressure made a number cave in—"Everyone else was smoking pot." From survey results this is apparently an inaccuracy if the "everyone else" is athletes.

Others succumbed to a search for kicks. A college wrestler from Massachusetts simply wanted to "get high." A water polo player from California ate brownies spiked with marijuana for the same purpose. One of two who admitted to LSD, however, claimed it was "snuck in on me."

Unlike the case with using restoratives or additives for competition, no one commented positivily on the aftereffects. One said pot "wasn't much." Another who tried grass, "reds" and "whites" termed it "a waste of money."

Among the 90 percent plus on the "no"side of the ledger, one athlete reported, "I'm trusting in the Lord and don't feel I'll have a big urge to try drugs."

Question. Are drugs used by your teammates?

In a sense curious, but in a way predictable, the reported incidence of drug abuse rose drmatically when the monkey was placed on the other guy's back. A third of the athletes (67) said "yes" while 133 answered "no." And among the "no's" were added these qualifications: "Not that I'm aware of"; "I have no idea"; "I don't know"; "I'm unsure"; "Not to my knowledge."

Here are responses from those answering affirmatively:

"Three of my teammates use pep pills and about a dozen are on pot" (Santa Barbara, Calif., prep football player).

"Yes, but only the losers" (another California gridder).

"Our catcher is on grass" (high school baseball player).

"A lot."

"About ten percent."

"At parties to a great extent" (Colorado high school athlete).

"Two of my teammates were convicted for possession of grass" (Pennsylvania high schooler).

"Pot is the *real thing* to do" (college athlete).

"Over 50 percent of my teammates have tried drugs and 10 percent are on them regularly" (college athlete).

"Several are on 'speed'."

"They use drugs to rejoice over a victory or nurse a defeat."

Among those saying "no" the statements included, "Most athletes are smart enough not to use drugs" and "We're trained not to use what we don't need."

One high school athlete scribbled what may be a foreboding prophecy, "No—not yet."

Question. Do your coaches advocate the use of drugs or stimulants?

The coaches can be proud of a superior won-loss record on this one. Only five percent advocated such usage, and this was primarily in the area of painkillers. Of the 200 athletes, 190 answered "no" and 10 said "yes." One Iowa gridder commented, "They (coaches) have recommended stimulants to help us play better."

One California baseball player sounded a note which might be indicative of a larger percentage of coaches: "The coaches are aware of pill usage, tell us not to do it but take no steps to prevent it."

Here are comments from those giving their coaches a high score:

"My coaches believe drugs are merely a false confidence and power."

"They believe we should win on our own ability."

"Coaches feel no game is important enough to risk a life for it" (college gridder).

"He is more concerned with the welfare of the players than a football season" (California prep athlete).

"Both my coaches are Christian men and wouldn't think of it."

"Coaches discourage drugs and say if we don't have inner stimulation to compete, drugs won't help" (New Jersey high school football player).

"They say drugs only make you think you're playing better" (Virginia prep).

"My coach says the best way to prepare for a game is a good night's rest and the proper food" (Iowa prep).

"My coaches don't talk about drugs. Guess they figure we have more sense" (Arkansas high school athlete).

"My coach says Jesus Christ is the only stimulant we need" (high school swimmer in California).

ARTIFICIAL ATHLETES

(By Gary Warner)

"Before long the champion athlete will not necessarily be the one who trains the hardest or competes the best, but the one who has the best pharmacist."

Author-coach Tom Ecker might be nearer the truth than the athletic community would like to believe. Drug usage in pro sports is no small problem. Too many players—and not all of them with axes to grind—have indicated that the use of stimulants and painkillers is widespread.

Just as Paris fashions determine U.S. hemlines, the trends in pro sports are eventually imitated by colleges and high schools. Drug abuse—on and off the field—will undoubtedly increase at all levels of athletics, athough from our drug survey and other sources we're encouraged that athletes are less hung-up on drugs than other segments of the youth culture.

Drug use by prep and college athletes in their social life can be attributed to the typical actions of young people caught up in the particular peer groups. From the in-sport standpoint, there may be two key factors which have contributed significantly to rising drug usage.

The Advantage: Athletics are meant to be competitive. But when the stress goes from healthy competition to the win-at-all-cost syndrome (again, seeping from the pro wars to the business-like conduct of kid's leagues) the emphasis is on finding the advantage.

As in big power missile-anti-missile escalation, an athletic defense soon combats the new offense. Improved training methods produce bigger, faster, stronger bodies. Better equipment (such as the fiberglass pole) is created and records are demolished.

And when men and boys find that a pill or a shot masks pain or makes them quicker, stronger and more durable (if only psychologically) they'll take them.

The Artificial: Artificial turf seems emblematic of the larger synthetizing of athletics. The "plastic society" includes the athletic world. Games are tailored for television. Expansion has, in certain instances, denuded major league professionalism.

And some athletes—from all this—have found the freedom and enjoyment of athletic expression replaced by a cold, sober liturgy. As the contest is dehumanized, so are its participants. As every advantage is exploited, as the games and its performers become artificial and dehumanized, the reactions of athletics will range from being bored to feeling betrayed. And they will turn elsewhere for satisfaction.

If the joy is drained from games, we must realize that it takes more than winning to fill the vacuum.

If we try to purge ourselves of drugs and other debilitating experiences, we'd better come up with something solid to fill the gap. Sports can play a role. But worshipping a ball only courts disaster. We need to inhale that which meets our deeper needs.

The Bible records a meeting at a well in Samaria between Jesus Christ and a woman. Her immoral life had dehumanized her. Hers was an artificial existence. She might have wished to exhale all her patterns of existence, but what was there to inhale?

Jesus said the answer was himself—his life style we know as Christianity: ". . . whoever drinks the water that I will give him will never be thirsty again. For the water that I will give him will become in him a spring which will provide him with living water, and give him eternal life." (John 4:14).

An oversimplified solution to the drug problem? Some might think so. It's certainly not foolproof because our humanness always gives us fits. One thing thousands of Christian athletes have proven, however—it beats whatever might be the second-best solution hands down.

And the fringe benefits of stripping off artificiality to become a real person in Christ are fantastic.

DRUGS IN SPORTS—PART 2

Last month's Christian Athlete featured the first half of a candid drug survey. Two hundred high school and college athletes, representing a cross section of sports and states reported on the drug usage in their world.

A synopsis of the key responses:

Fifty-five percent indicated that drugs were a "real problem" in their community. Many of the dissenting 45 percent found the word "real" unacceptable and explained that drugs were a problem but not of serious proportion.

Only 9 of the 200 had ever taken pep pills or stimulants prior to a game. One of the nine had suffered ill effects; the other eight claimed to have benefited.

Ten percent admitted to using drugs on occasion—mainly marijuana and prompted mostly by curiosity, thrill seeking or peer pressure. No one commented positively on the aftereffects.

A third of the athletes claimed that teammates use drugs.

Happily, 190 noted that their coaches did not advocate the use of drugs or stimulants. And the few mentors who did confined their recommendations to the area of painkillers.

Here is the concluding half of the questionnaire.

Question. Is the drug problem more smoke than fire in athletics or is there real reason to be concerned?

Twenty-three percent did not know. But the other 77 percent had strong opinions.

Forty percent insisted there was definite cause for concern. "There's a lot of blowup but underneath it's a hot problem," said a prep gridder from Minnesota. Claimed a California football player, "I've heard of too many cases where athletes have OD'd (overdosed) on the field and in some cases even died."

"The drug problem in athletics is comparable to a raging forest fire with no signs of control," stated a college thinclad from North Carolina.

"The drug scene is much greater on the college campus than at the high school level," contended one fellow.

"I've seen our trainer offer mysterious little pills to star players before a bowl game," confided a footballer.

Several professed concern, although the drug problem was either minimal or nonexistent on their campus.

Thirty-seven percent smelled smoke. "The harmful effects have become so real to the majority of guys that they've turned away from them," said a Texas gridder.

Among other comments: "Wise athletes know there's no future in drugs"; "The athletes I've talked with realize the dangers involved"; "Real athletes don't need drugs."

Question. Are drugs more or less a problem for athletes than alcohol and cigarettes? Why?

The overwhelming majority (137) affirmed drugs as the lesser of three evils. "Because booze and cigarettes are more accepted and accessible" emerged as the recurring and overriding reason.

"Yeah, we got a lot of smokers and beer hounds on our team" a prep cager noted dryly. "Many athletes are afraid of drugs but think it's okay to smoke and drink," observed a three-sport letterman from Michigan.

"An athlete can come off alcohol and cigarettes much easier than he can drugs," said a New York prep soccer player.

Twenty-three voted alcohol as the overall chief culprit and listed "cheapness," "less penalty," and "easier to get" as the whys of its popularity.

Twelve athletes lumped drugs, smokes and liquor in the same bag: "All have a killing effect"; "All affect your body in an unnatural way."

Seventeen were opinionless.

The 34 who underlined drugs as more of a hangup were more prolific and specific:

"Athletes lose more if they use drugs."

"If you're caught with drugs you're in greater trouble."

"Drugs are easier to get hooked on and far more dangerous."

"They give an athlete a false sense of his abilities."

"Athletes believe drugs will help their performance."

"Certain drugs can damage faster than alcohol and cigarettes ever could."

"Athletes are more susceptible to booze and smoking but if they take drugs—they're shot!"

Question. Is there ever a time or situation in which you would defend drug usage by an athlete?

Nine percent (18) opted for an "I don't know" or "I doubt it" answer.

Fifty-one percent (103) would never defend drugs under any circumstances.

The 40 percent (79) who would defend its "situation ethics" use invariably qualified their response:

"Only as a painkiller for an injury" (44).

"Only if prescribed by a doctor or with his approval" (13).

Other single justifications and stipulations included:

"Before a big game you've worked so long and hard for" (track/football player in California).

"Only on the professional level since it's their livelihood."

"To settle a nervous condition a player has before a game" (prep cager from Virginia).

"Only to help you. Maybe like when Willis Reed on the Knicks used them" (high school basketball player).

"Not unless it would help the person to heal."

"Surgery is the only occasion" (cross-country collegian).

"If it would benefit the team" (Texas high school gridder).

"If it's absolutely essential that a guy play" (prep football player from Maine).

Question. Do you think coaches you've played for feel morally responsible about drugs, stimulants, etc., or is their action primarily motivated by the desire to win?

If this query were posed in the shape of a pie, the final servings would consist of four irregular-sized pieces.

Thirty-eight stated that their coaches derived incentive from winning but declined to elaborate.

Eighteen felt their coaches combined both elements but did not mention if the outcome was satisfactory or successful.

Forty-seven took a vow of silence.

Ninety-seven affirmed their mentors as morally and ethically responsible and frequently inserted a plug for them:

"My coaches love to win but not to the point where an athlete will be hurt."

"Most of any coaches feel responsible for us as human beings."

"They care about us."

"I don't think they're so entered on winning that they'd risk a guy's life."

"Our coaches have threatened to turn in the names of any athletes they find using drugs, including their own sons."

"My coaches abhor the use of drugs."

"My coaches are more concerned with an athlete as an individual rather than as a machine to win games."

"Sure they want to win, but they feel they can do it without drugs."

One prep athlete from Iowa who selected the "desire to win" category pushed the lever with extreme caution: "I think if we were in a championship game and a player was injured who meant the difference between winning and losing—my coach might consider a painkiller."

Question. What would be your solution as to how athletes and coaches deal with the drug problem both within and outside of athletics?

At first glance, chances of licking the drug demon seem as remote as Willie Shoemaker outrebounding Artis Gilmore. Generally the athletes' answers were nebulous ("stay away from it") or ridiculous ("ban everything concerned with drugs").

Ten flatly said there was no solution.

Nineteen favored expelling any offender from the team.

Nineteen admitted they couldn't think of any remedies.

A dozen asserted Christ or God as the sole panacea.

Not everyone copped out or wistfully spirtualized. Although the final scoresheet didn't promise any spectacular win streaks, some potentially workable solutions poked their heads through the ominous drug cloud hovering above the not-so-innocent-world of the latter-day jock.

Personal communication between players and coaches.

Show the effects of drugs on the body . . . let ex-addicts tell their story.

Have groups such as FCA and the YMCA sponsor seminars that give teams the scoop on the drawbacks of drugs.

Stop stories exposing pro athletes and drugs . . . they implant too many ideas.

Tougher rules and enforcement of them by the coach.

Personally refrain from using or experimenting with drugs of any kind.

Use athletics as an outlet for a withdrawing addict's time and energy.

Prove, as a Christian athlete, that drugs are neither wise nor beneficial.

Better utilize the athlete's influence to share and show that there's a better way and more to life than drugs. Like Jesus Christ.

Always remember that Christ said your body is his dwelling place.

As one fellow realistically concluded, "It will take the time and dedication of thousands of athletes to solve the problem."

But it can be done and God can use you to make it happen. If you're willing.

APPENDIX 27

CALIFORNIA LEGISLATURE,
ASSEMBLY COMMITTEE ON HEALTH,
March 22, 1972.

Mr. JOHN RECTOR,
Deputy Chief Counsel, Juvenile Delinquency Subcommittee, Senate Annex, Washington, D.C.

DEAR MR. RECTOR: As you requested, I am enclosing a copy of the Assembly hearing transcript concerning Drug Abuse in Athletics. I hope it will be of some value to you.

The other Washington request for this document came from the office of Congressman Staggers. I don't know what committee he is connected with but I assume you will know.

I will be interested in your progress on this subject and I would appreciate it if you would make whatever information you might develop available to me.

Sincerely,

DAVID A. WINSTON, *Consultant.*

Enclosure.

ASSEMBLY INTERIM SUBCOMMITTEE ON DRUG ABUSE AND ALCOHOLISM

DRUG ABUSE IN ATHLETICS

TRANSCRIPT OF PROCEEDINGS

October 20, 1970 - 10:00 A.M.
California Museum of Science and Industry
700 State Drive - Exposition Park
Los Angeles, California

MEMBERS OF THE SUBCOMMITTEE

Assemblyman William Campbell, Chairman
Assemblyman Gordon Duffy
Assemblyman Kent Stacey
Assemblyman Larry Townsend
Assemblyman Henry Waxman
Assemblyman Pete Wilson

Mr. Steven Thompson, Consultant
Pat Landsness, Secretary

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ASSEMBLYMAN CAMPBELL, CHAIRMAN: This meeting will come to order. Will the Secretary please call the roll: Assemblyman Duffy, Assemblyman Stacey, Assemblyman Townsend, Assemblyman Waxman, Assemblyman Wilson. Today the Assembly Health and Welfare Subcommittee on Drug Abuse and Alcoholism intends to explore the extent to which drugs play a part in athletic competition.

I'm sure those of you present today are aware of the publicity surrounding this issue. This publicity, if well founded, points to a potentially disasterous situation in athletics today, wherein the athlete - for real or imagined reasons - will feel the necessity to add drugs to his training regimen.

The fact that we are a drug-oriented society is a well established cliche; the fact that sports are now included within the context of a "turned on society" only confirms the extent to which chemicals are in inseparable aspect of American life.

Society's mass use of drugs in order to cope with the problems of living is serious indeed; the impact on athletics is even more alarming, for inappropriate drug use bears the seeds of destroying the notion of competition as we know it and as it has existed since the first Olympic Games.

There is no doubt that drugs have a definite role to play when required for the treatment of injury--and injury is an inevitable consequence of physical competition. When drugs assume a position of competitive importance beyond this role, however, the nature of competition and the role of sports in general becomes a perversion of its original purpose.

We have endeavored successfully to define distinctions regarding the use of drugs when horses compete against one another. I optimistically believe horse racing policies protect both the nature of competition and the health of the horse. I feel it is incumbent upon us, at this hearing today, to attempt to do no less for human competitors.

We at this hearing are sports fans, otherwise none of us probably would have expressed the obvious concern that is apparent by today's attendance. Working together with constructive suggestions we can prevent sports from becoming the testing battleground for chemical research. The medical laboratory, not the playing field, is the proper proving ground for testing drugs; and medical treatment of the ill, not the healthy athlete, is the proper role for the fruits of such research.

We would like to open the hearing today by hearing from Doctor Kay Dooley, from the Wood Memorial Clinic in Pamona. Doctor Dooley.

For those of you in the back, if you would like to move up, we don't have a P.A. System here in the building itself. We do have the microphones you see in front of us here for recording the hearing. All the testimony will be recorded and transcribed at a later date. So if you have difficulty hearing and would like to move up, I think you might have a better chance of hearing. And I would request that all those who are going to testify to speak in a loud enough voice to be heard, not only by the members of the committee, but by those in the audience.

ASSEMBLYMAN TOWNSEND: Mr. Campbell, before he gets started, does he have a prepared text that we all may have a copy of?

ASSEMBLYMAN CAMPBELL: Do you have copies of that text, Dr. Dooley, or do you just have one copy?

DOCTOR DOOLEY: I just have the one copy.

ASSEMBLYMAN CAMPBELL: Fine. Go ahead Dr.Dooley. Do you have an opening statement that you'd like to make into this whole area?

DOCTOR DOOLEY: I have a letter from Steve Thompson, outlining the general theme of the hearing of this committee. Questions to be discussed on the use of drugs among athletes. For instance the first topic to be discussed is "to what extent are drugs used among athletes", the pattern of use--impairing of skills and abilities, loss as a result of injuries or for added performance. As far as my experience, I normally take care of the high school and Jr. College athletes and the only drugs that these young people use is given to them by a team physician or a family physician or doctor in charge of their care as a result of injury. You might as well kick off with the use of the anabolic steroids which are the protein at the muscle level, thought to increase the metabolism. Thus building muscle faster than the athlete was formerly able to do. We see at the high school level ages 16, 18, 19 years of age boys who have reached a plateau in their metabolism, in their development in bone growth and muscular development and no matter what they do, seemingly, they develop no further. In other words, a boy 5 feet 10 or 11 inches, 6 feet who weighs 145 to 150 pounds notices the lacking in the muscles around the shoulder girdle, pectoral, etc., that needs some help in the protein metabolism line. The minimal dosage, 10 milligrams a day for 30 days, rest for two weeks, on for two weeks more, a diet of increased protein, a pattern of resistive exercises stressing the area of needed development. First chest, shoulder muscles, secondly, thigh muscles seem to be the need for the athlete in preparing him against the rigors of contact sports. Not while the athlete is engaged in the sport, but before he takes part in it, thus giving the athlete an even break as far as his defense in the sporting event, as far as injury is concerned to that particular athlete because......

ASSEMBLYMAN CAMPBELL: Let me interrupt here, Dr. Dooley. Are you saying that you use anabolic steroids not during the season, but prior to the big season?

DOCTOR DOOLEY: Right.

ASSEMBLYMAN CAMPBELL: You don't prescribe anabolic steroids during the season?

DOCTOR DOOLEY: None whatsoever.

ASSEMBLYMAN CAMPBELL: Do you notice any side effects from the anabolic steroids among high school or Junior College athletes?

DOCTOR DOOLEY: The side effects I have noticed have all been favorable. The athlete seems to gain in his confidence, he seems to gain in ability to get along with his fellow man. His grades increase, he seems to advance in his ability to get along with his fellow man, really.

ASSEMBLYMAN CAMPBELL: How long have you been prescribing anabolic steroids to high school athletes?

DOCTOR DOOLEY: We first ran an experiment, I talked to the Association of Southern California Football coaches in 1964, presenting an outline of the history and the results of anabolic steroid use and we ran experimental work the following year. And we were in experimental work at that time. We asked the question, serious questions, whether they thought that the use of such a drug was within the realm of ethical use as far as the athlete was concerned and we proceeded then to handle the experiment with 200 athletes ages 18 to 22 years of age, I believe.

ASSEMBLYMAN CAMPBELL: What year was this again?

DOCTOR DOOLEY: Nineteen sixty-five. Controlled experiments with the drug being doled out to the athletes, the athletes taking the drug in the presence of either myself or the coaches assisting me in the experiment. And since then these boys have been followed and we found no ill result of a minimal dosage for the athlete. We needed just enough to stimulate this boy to develop and fill in.

ASSEMBLYMAN DUFFY: Dr. Dooley will you give us a little of your medical background, please? Graduate of what school?

DOCTOR DOOLEY: Graduate of California College of Medicine, internship, residency of the Los Angeles General Hospital. I took a surgical residency there and I was a senior resident when I left the hospital. I've been in practice in Pamona California since 1946. I've been physician at Mount San Antonio College, this is my 25th year for the football team.

ASSEMBLYMAN DUFFY: And you are a Diplomata, therefore, of what Board?

DOCTOR DOOLEY: I am a Fellow of American College Sports Medicine.

ASSEMBLYMAN DUFFY: I see. And what research background have you had?

DOCTOR DOOLEY: I have done research in the anti-inflamatory drugs. I've done research for three different companies, Merck, Sharp & Dohme, Parke Davis, and Wallace Laboratories.

ASSEMBLYMAN DUFFY: What University was this associated with? What University or school of medicine was this associated with?

DOCTOR DOOLEY: This was associated only with the companies outlined, because I had a great number of athletes passing through my clinic. The number and type of injuries were the ones needed to help show the effect and result of certain types of drugs commonly used to treat athletic injuries.

ASSEMBLYMAN DUFFY: Now let me ask you this. This type of drug that you're giving, the anabolic steroids, is a form of hormone. Is that correct?

DOCTOR DOOLEY: It's been known for a long time that the androids which are the male hormones, and the estrogens which are the female hormones will help build bones. The chemist and the experimental researchers have put away the male hormone effect of these drugs and come out with the anabolic steroids.

ASSEMBLYMAN DUFFY: Now let me ask you this. They are a form of hormone drugs, and I don't need to know the name, the trade name. But it's put out by certain companies, is that correct? Now is there a warning of side effects on these drugs?

DOCTOR DOOLEY: Yes.

ASSEMBLYMAN DUFFY: And what are the potential side effects?

DOCTOR DOOLEY: The potential side effects, mainly the warnings, are for the use of females. The possibility of a male hormone effect. In other words a deeper voice, hair on their face, the reflection in the size of the breast, the various reactions that you have when you get heavy doses of male hormones. There is an outside chance that this could be caused by the use of the anabolic steroids. Those very, very small anabolic steroids are measured by their nitrogen retaining effect in the body, or their anticatobolic effect.

ASSEMBLYMAN DUFFY: And there are no dangerous side effects for males that are pointed out by the manufacturers of these drugs, is that correct?

DOCTOR DOOLEY: Only if taken in massive doses.

ASSEMBLYMAN DUFFY: I see. There have been no reports in the literature that there's any danger in the disruption of sexual function at all for a male?

DOCTOR DOOLEY: There have been reports in lay literature that the possibility exists. But I have seen no actual demonstration by legitimate research that this can happen. Of course, reaction to drugs for any person is individualistic. Your reaction and mine would be different. And this has to be observed if the athlete is under care and observation, this is what he goes through. And if there's abnormal reaction, I don't care what drug you're using with a patient, you withdraw the drug.

ASSEMBLYMAN DUFFY: And how many patients do you have now on anaoblic steroids?

DOCTOR DOOLEY: I have one, sir.

ASSEMBLYMAN DUFFY: Oh, I see. So you do it very rarely, is that correct?

DOCTOR DOOLEY: When the indication is present, I feel I can use it. But not indiscriminately.

ASSEMBLYMAN DUFFY: You don't use it on all of the patients?

DOCTOR DOOLEY: No. I don't give it out. But if he thinks he should gain weight, he's 6 feet 2 inches, weighs 255 not an ounce of fat on him. I'm not trying to give that boy an advantage over a like competitor who weighs the same, so forth and so on.

ASSEMBLYMAN CAMPBELL: Is the reason you only have one on now because of football season?

DOCTOR DOOLEY: No, this is a basketball player.

ASSEMBLYMAN CAMPBELL: So this year you only have one on.

DOCTOR DOOLEY: I had none for football either this year.

CHAIRMAN CAMPBELL: When you ran the two you started with 200 young men in 1965 in the age of 22 category. Now you say you followed those 200; did you check them every year, or how did you do.....

DOCTOR DOOLEY: Yes, we get together, we've gotten together approximately three times since the original work was done and we've gone over and kept track of where these boys went to college, if they did go to college. A great many of them played ball at different college levels and, of course, since then have graduated from college. There are a few of them in pro ball at the present time.

CHAIRMAN CAMPBELL: And none have noticed any side effects from it?

DOCTOR DOOLEY: No. And there have been no great regressions. When they stop the drug they did not go back to their original weight or abilities. They kept the level which they had attained.

CHAIRMAN CAMPBELL: You then would be an advocate of the utilization of anabolic steroids?

DOCTOR DOOLEY: Only when indication occurs. The same with any drug. You have an indication to use it you should use it. I feel that you should use any drug within your armamentarium to help the athlete. It's just the same as if you would use the whirlpool or ice or tape an ankle or support a shoulder.

CHAIRMAN CAMPBELL: You're comparing anabolic steroids then with utilization of whirlpools and tape?

DOCTOR DOOLEY: Well your end result is the same.

CHAIRMAN CAMPBELL: How is that?

DOCTOR DOOLEY: Increased action of the athlete to a plateau where you had started beneath this plateau to re-increase the injured players ability back up to the pre-injury level.

CHAIRMAN CAMPBELL: But you're not re-increasing with steroids are you? This is the kind of an added drug that you're putting something there that wasn't there before. Is that correct? The whirlpool doesn't do that nor does the tape.

DOCTOR DOOLEY: They all act in bringing the athlete's performance to a certain level, to a certain norm. In other words, a boy that is 5 feet 11 inches, weighs 140 pounds playing the line opposite a man who is 5 feet 11 inches, weighing 210 pounds, all muscle. Now this boy in the line with the height and weight has a definite advantage over the boy on this side, right?

CHAIRMAN CAMPBELL: What's the most weight you put on any individual through the use of steroids, and in what period of time? Let me digress first of all. How long did you conduct this experiment with the 200 people?

DOCTOR DOOLEY: It was taken over a 2½ year period.

CHAIRMAN CAMPBELL: And over that 2½ year period, say from 1965 to 1967 you gave these young athletes anabolic steroids--all of them?

DOCTOR DOOLEY: On the drug for 30 days, rest for two weeks and on for two weeks more. This is all the drug they got.

CHAIRMAN CAMPBELL: They would go 30 days and then what, rest?

DOCTOR DOOLEY: Rest, for 2 weeks.

CHAIRMAN CAMPBELL: And then.......

DOCTOR DOOLEY: Two weeks more - fourteen days more on the drug.

CHAIRMAN CAMPBELL: So then they only had 45 days on the drug? Is that a daily dosage?

DOCTOR DOOLEY: Yes, ten milligrams, that's the top dosage. Some drugs came in two milligram size--we would use 3 of those (two, four, six). Some came in five milligram size--we'd use 2 of those.

CHAIRMAN CAMPBELL: So some were not taking ten milligrams?

DOCTOR DOOLEY: Right, ten was the top dosage.

CHAIRMAN CAMPBELL: What, in your judgement is the maximum dosage to use that could cause side effects when you say massive dosage?

DOCTOR DOOLEY: I have no facts to present to you on this. I have only a guess--it would only be an educated guess as to how much they can take, but I have seen athletes take drugs such as these, like they were taking peanuts at breakfast and.....

CHAIRMAN CAMPBELL: Take steroids like they were eating peanuts?

DOCTOR DOOLEY: Well, I would assume that steroids were within the drugs they were taking. They would have a whole pile to take each day and this is going to build them up, at least by and large more weight than on field and track teams.

CHAIRMAN CAMPBELL: Then let me ask you to reiterate the question Mr. Duffy asked. To your knowledge you've never seen any athlete nor have you read in any medical journal where any athlete has had serious side effects from the utilization of anabolic steroids?

DOCTOR DOOLEY: None to my immediate memory, no.

CHAIRMAN CAMPBELL: Do you believe that it's competitive to use steroids--these kinds of anabolic steroids that are additive kinds of drugs as opposed to restorative types of drugs?

DOCTOR DOOLEY: I believe that if we follow a different formula and pattern or normal or average. That is, we can bring an athlete up to a normal average. We're doing a service and if we let this boy expose himself to a sport without doing this, we are taking a chance on this athlete. Unfortunately, we don't try to put a boy to a sport. Football is here and every boy wants to go out for football and be a football hero.

CHAIRMAN CAMPBELL: Let me ask you this, Doctor. What if every youngster playing in sports took the steroids no matter what his size at any one given time. Then you don't neutralize the impact of the steroids, so why take them in the first place?

DOCTOR DOOLEY: Every boy doesn't need the steroids. Every boy has the power to metabolize enough protein and build up to a certain level. I'm saying the ones that don't have the power to metabolize these proteins and build muscle has reached a plateau in muscular development and needs a little help once in a while.

CHAIRMAN CAMPBELL: But you just said you've seen athletes sit down and take a series of pills at any one given time.

DOCTOR DOOLEY: But I didn't say I gave these athletes the pills.

CHAIRMAN CAMPBELL: I understand that, but isn't it possible that the athlete that is 6 feet 2 inches and 230 pounds might be taking steroids also and so if that's the case, what's the effectiveness, if he's going to add 30 pounds to him. The guy at 150 pounds is going to go to 180. They're still going to have the same ratio of difference, right?

DOCTOR DOOLEY: This is true, but we have no control over the athlete that is doing this on his own on the side and not under a physician's supervision.

CHAIRMAN CAMPBELL: Do you find a lot of drugs available to athletes? In your judgment are there a lot of drugs available to them?

DOCTOR DOOLEY: I've had athletes offer to get the drugs for me.

CHAIRMAN CAMPBELL: From what source?

DOCTOR DOOLEY: Well, one would be the DMSO (Dimethylsulfaoxide) that we've all heard about and maybe some of us used when it was available. It has been taken off the market. DMSO is a drug that you rub on. It's a powerful absorber and it was first developed as a bi-product of paper pulp, developed by the Crown Zellerbach Corporation along with the University of Oregon.

CHAIRMAN CAMPBELL: Is that still available?

DOCTOR DOOLEY: No, it has been taken off the market by the food and drug administration.

CHAIRMAN CAMPBELL: It's still available, though?

DOCTOR DOOLEY: No, you can't get it--legally.

CHAIRMAN CAMPBELL: I understand that you don't, but in your knowledge, is it used?

DOCTOR DOOLEY: Well I've had athletes offer--say, "Doc, I'm going to Germany, I'll bring you back some DMSO. We can get all we want over there." And it used to be that some of the boys would go to Mexico and where they could get the drug or they'd bootleg it back to the United States. But as far as I'm concerned it's not legal. It is not a drug that is recommended, it hasn't been researched adequately--until it is, I will not use it in my armamentarium of taking care of athletes.

CHAIRMAN CAMPBELL: But you would use and you do use anabolic steroids?

DOCTOR DOOLEY: I have, yes. If the indication is there.

ASSEMBLYMAN TOWNSEND: Mr. Campbell, may I ask him one question at this time?

CHAIRMAN CAMPBELL: Yes, but before we do this let me introduce Assemblyman Henry Waxman of the Los Angeles area who just got here.

ASSEMBLYMAN TOWNSEND: Doctor, did I understand you to correctly say that the athletes have no trouble getting these drugs that they need--that they want?

DOCTOR DOOLEY: Well, let me answer your question this way. It's been my experience that the world class competitive athlete has no trouble in getting these drugs. The professional player has no trouble getting these drugs. But as far as.....

ASSEMBLYMAN TOWNSEND: Whether or not they're under a doctor's care? Where do they get them? From trainers?

DOCTOR DOOLEY: No, the trainer reflects the use of drugs to the team physician and the trainers are great men. They are the ones that help we physicians that take care of athletic injuries. And I've worked with one trainer for 25 years, we've developed a working ability. Say, for instance, you go out on a football field to take care of an injury and we never have to say words to each other because we automatically know what the other fellow's going to do. We've worked this long together. But my trainer gives only aspirin once in a while. He does not give any drug that is a prescription drug.

ASSEMBLYMAN TOWNSEND: So the only place they can get these drugs which they have no problem getting is by smuggling them in and out of the country. Is that what you're telling me doctor?

DOCTOR DOOLEY: Yes, and the teams that are--the athletes that are world class athletes and travel all over the world to compete and the professional ball players, professional athletes that travel all over to different parts of the United States and sometimes Europe have the opportunity to obtain these drugs legally in that country which they visit.

ASSEMBLYMAN TOWNSEND: Well let's take a team that doesn't get out of the country. The Los Angeles Rams, for example.

DOCTOR DOOLEY: Not if they play San Diego.

ASSEMBLYMAN TOWNSEND: Then you say that they go across the border and smuggle the stuff in?

DOCTOR DOOLEY: Very easy to go across to get their bennies in Tijuana or whatever else they might want.

ASSEMBLYMAN TOWNSEND: Maybe we better notify the Border Patrol from now on, everytime a team crosses the border we ought to double check them.

DOCTOR DOOLEY: This might be a good idea. Because I do know that this has happened in the past with these athletes.

ASSEMBLYMAN TOWNSEND: Well, Doctor, this amazes me that men of this caliber will smuggle this stuff across the border in the quantity that they have. It really is amazing to me.

DOCTOR DOOLEY: Well the affect of a pro ball player using a bennie or using this or that to give him a little added advantage over his competitor is a very bad thing. Because your high school and your college ball player or athlete will mimic the professional athlete. They'll mimic them in the shoes they wear; they'll mimic them in the type of quarter back that this man is, his way of passing; they'll mimic the way of running. Like for instance basketball, Wilt the Stilt. I've seen many boys try the same shuffle back down the court as Wilt Chamberlain uses. They mimic these men who are their heroes. Each athlete puts up a man kind of like a "god" for him and he will mimic the action. If he finds out that this athlete's taking amphetamines, he will want to take amphetamines.

ASSEMBLYMAN TOWNSEND: I know that you were at Lake Tahoe with the Olympic Team and the weight lifters up there I imagine-- I understood took the steroids. Do they take them during the....

DOCTOR DOOLEY: Weight lifters weren't present at South Lake Tahoe.

ASSEMBLYMAN TOWNSEND: Would you know anybody at that time who were taking steroids?

DOCTOR DOOLEY: The weight men--we consider the shot-putters, the discus throwers, javelin throwers and the hammer throwers. Many of these weight men told me that they took anabolic steroids. Not by my prescription, but in our off-the-record discussion they said they had to take these or not be in competition with the other men in the same event.

ASSEMBLYMAN TOWNSEND: Do you believe that, Doctor?

DOCTOR DOOLEY: Do I believe what?

ASSEMBLYMAN TOWNSEND: That you have to take steroids in order to compete?

DOCTOR DOOLEY: No, I don't believe that. I'm repeating a statement told me by the world class athletes.

ASSEMBLYMAN TOWNSEND: But they were being used at that time, is that correct?

DOCTOR DOOLEY: This is what was told to me. It is not an actual fact, but a relay of a message that was given to me.

ASSEMBLYMAN TOWNSEND: Thank you, Mr. Campbell.

ASSEMBLYMAN CAMPBELL: Doctor, let's go talk about some of the rest of these drugs. Say the use of a pain killer on a joint that has been injured so the athlete can go back in to play. Do you have some personal medical feeling about what the impact would be say--pain is essentially natures way of warning an individual that something is wrong. But when you--whether it's novocaine or morphine or whatever is given to the individual or demethysulfaoxide, is that it?

DOCTOR DOOLEY: Dimethylsulfaoxide. DMSO.

CHAIRMAN CAMPBELL: Okay, whatever's given, what are the chances say of this individual--if he uses that, sustaining a more severe injury, sustaining a permanent injury or ending with dramatic arthritis in his early fourties?

DOCTOR DOOLEY: In the first place, I willnot use a pain killing drug on an athlete to return to the contest. This is beyond my philosophy in the care of an athlete and I will not use novocaine to block pain impulses during a contest. I will not use it, period. I will use it afterwards, possibly to help the athlete avoid this pain after a diagnosis has been made--x-rays or whatever he needs has been taken to assure us what the diagnosis is on the injured athlete. I see nothing wrong in giving the athlete a mild pain killer so that he can rest during the night.

CHAIRMAN CAMPBELL: Are you talking about barbiturates here?

DOCTOR DOOLEY: No I don't mean barbiturates. I mean analgesics and muscle relaxers.

CHAIRMAN CAMPBELL: Are there any more questions for Doctor Dooley? Mr. Stacey.

ASSEMBLYMAN STACEY: I just have a couple of questions. Doctor isn't it true though that oftentimes the athlete himself--now we talk about getting some of these drugs through illicit sources, for instance from foreign countries which we know are readily available--but is it true, particularly in the weight building area that many of the athletes and particularly in the sports like football or the weight events in track and field, that they're usually looking to overly develop themselves in a sense because they do feel that they'll get this added advantage. And that even when some of these are not available from outside the area that they oftentimes turn--particularly young people--to over- the-counter medication that is available that they're supposedly going to put weight on?

DOCTOR DOOLEY: Yes, this is true. Like protein pills and various types of vitamins that you see and things that they can obtain by legal methods, but they've always got their ears open for something that will be a crystal ball and do this job for them. Now, unfortunately, nothing takes the place of talent and nothing takes the place of hard work and a lot of the athletes are dedicated and they work hard to build their bodies--and especially the area in which they excel.

ASSEMBLYMAN STACEY: Don't you also feel that in many cases that you can control the end result of what is going to happen to this person's body through the use of something like anabolic steroids rather than many of these, so to speak, rapid weight builders on the outside that are available over-the-counter?

DOCTOR DOOLEY: Well, we know that a great many of the so called weight builders do very little to help the athlete in gaining weight. It's like the use of protein, any type of protein--goes back to the age of the gladiators. They figure if they wanted to develop muscles they would eat muscle to develop muscle. And we've carried this right up to the present day--even without pre-game meal. Whereby we should be using a carbohydrate rather than the protein for a pre-game meal.

ASSEMBLYMAN STACEY: How would you rate the anabolic steroids in comparison with a body building program--a weight program, let's say?

DOCTOR DOOLEY: They catalyze the weight problem. In other words, you can gain the weight faster if you're taking anabolic steroids on this particular weight program and the weight program designed to build one area of the body.

ASSEMBLYMAN STACEY: One other question. Wouldn't you say that oftentimes one of the legitimate sources for many of these fellows in particular to obtain these drugs would be just by going to their own physician who is really not well acquainted with what some of the results of a few of these steroids are and doesn't particularly keep himself on top of it like you would in an athletic program and being a team physician?

DOCTOR DOOLEY: This is true. But the generalization of 99 percent of the physicians would be not to use or not to give a prescription for this drug if they don't know much about it. They would bend over backwards the other way--this has been what I find and the physicians--we have a tendency to criticize the use of something we don't know about. No, I wouldn't ever use that.

ASSEMBLYMAN STACEY: Give me a couple of trade names because I just can't.....

DOCTOR DOOLEY: Dianabol, listerol, anabolic steroids are just a very, very small compartment in the care of the injured athlete or the athlete that needs to be helped up to a normal level--as there are many, many different ways. Then just common sense training rules that we use, anabolic steroids are an infinite part of this, and used only when you have a definite indication. This is the thing I'd like to get across that there's only a very, very small part in our over-all picture or philosophy of treating sports injuries or preventing sports injuries.

ASSEMBLYMAN STACEY: Doctor, I never knew people had difficulty putting on weight.

DOCTOR DOOLEY: Wouldn't it be wonderful to have to.

CHAIRMAN CAMPBELL: We thank you for your testimony today. Our next witness this morning will be--is Doctor Blazina here yet? We'll go to Doctor Kerlan. Doctor Kerlan is the team physician to the Los Angeles Lakers. And, if things go well this year, the World Champion Los Angeles Lakers. Doctor Kerlan do you have an opening statement that you would like to make--some comments you'd like to make?

DOCTOR KERLAN: I did receive this letter from your committee and I'm most happy to appear. I tried to respond to some of the questions that were asked. I think perhaps first of all it is important to define the word drugs. The dictionary states the preferred definition is any substance used as a medicine or in making medicine. Another definition is a narcotic substance or preparation. In my opinion there is no known usage of narcotics by athletes in order to improve their performance. I do not believe that the public is being exposed to drugged athletes or doping athletes by trainers or doctors. Naturally, medications are used in the treatment of illness or injury as deemed necessary by attending physicians or trainers acting under the immediate supervision of physicians. In my opinion, medications are substances used for additive performance reasons--would be more psychologically reactive rather than having specific affects on the tissues of the body. That is my original statement. The rest of it is confined to the questions that were asked.

CHAIRMAN CAMPBELL: Why don't we get into some of those questions then? I think the thing that concerns most of us today is that the real essence of sports is matching the natural ability of one individual against another--a group of individuals against another group of individuals. I think the concern we have is when you deviate from that natural ability through the use of additive kinds of drugs or even when you use restorative drugs to the extent that it might cause permanent damage to the individual--have you not perverted the whole concept of sports itself. In other words, do you believe in the utilization say of anabolic steroids or any other type of additive drugs? I understand that the use of amphetamines is a common practice in a number of cases.

DOCTOR KERLAN: No, I do not subscribe to the usage of medications of this type. I think perhaps hormones in very carefully selected cases may have a role to play. But in general I believe a drug of this nature should not be used by the athletes. I think that the kind of drugs or medications used by athletes would roughly fall into three categories. I think there are substances that are relatively helpless, relatively harmless. These would include the vitamins either oral or injectible, fluids which are aimed to replace chemical loss through perspiration. And I think this group is basically beneficial from a psychological aspect. There may be some indications to using oil soluble vitamins in large amounts that the body can store and could cause some side effects, even an innocent thing as a vitamin. However, most of the water soluble vitamins are eliminated if they're taken to an excess. As a rule the dietary needs of an athlete who's eating anywhere near the average diet does not have to be supplemented by vitamins. The second major category of medications are substances that are very helpful and usually harmless when administered under a doctor's supervision. This is the vast group of medications that are used for the treatment of illness and injury. These would include the anti-bacterial group of oral and injectable mycins, penicillin and other chemotherapeutic agents for treatment of specific infections. The anti-inflamatory group which would include cortisone, hydro-cortisone, butazolidin, endocin to mention those most prominently recognized, also the analgesics, such as aspirin and associated medications consisting mostly of aspirin. And injectible analgesics such as novocaine or procain, xylocain, or longer acting local anesthetics. Also frequently used are medications such as enzymes to reduce swelling, muscle relaxing medication for muscle spasms, local sprays for mucus membrane and skin application. And there are a great number of medications used for healing of the skin, such as liniment. The third classification I think is the group that you're mostly interested in, and those are the ones which offer little, if any, real help and can be quite harmful. And these include stimulants, depressants, hormones and specifically to increase weight or strength. The common used stimulants are amphetamines and combinations of amphetamines and barbiturates, known as spansules or tablets or greenies. These medications have certain specific pharmaceutical actions and are considered important parts of a doctor's armamentarium.

ASSEMBLYMAN TOWNSEND: Doctor, excuse me a moment. May I, Mr. Campbell?

CHAIRMAN CAMPBELL: Yes.

ASSEMBLYMAN TOWNSEND: Are stimulants given right prior to a game, for an example?

DOCTOR KERLAN: Well, first I want to talk, if I may, of a thing that I'm most familiar with and these are the teams that I take care of. And have taken care of for a number of years. It is difficult for me to speak for other doctors or to represent their feelings. I have taken care--did take care of the Los Angeles Dodgers for a period of ten years. I am intimately associated with the care of the Los Angeles Lakers and Kings, basketball and hockey team, San Diego Padres baseball team, consult with the Los Angeles or California Angels team.

And, of course, individual athlete in various sports, including track and swimming and sports of this nature. Now we--I do not allow stimulants as a direct order by me and the trainer that I'm working with understands this. We do not allow the use, knowlingly.

ASSEMBLYMAN TOWNSEND: Is that just for the game day or for any any time at all?

DOCTOR KERLAN: For any time. I believe that anathlete should be able to--despite the travel schedule which can be quite wearing and the number of contests that they're exposed to--should be able to conduct themselves in a natural manner and develop the natural way of caring for his body so he can participate. I think adding unnatural situations such as stimulants which then often may lead to depressants in order to counteract the stimulant effect, does not represent the true purpose for athletic competition. I think that they should be--the usage should be--very limited and in general should be condemned. I believe as we get into some of the other questions as to what has been done you'll find that certain groups have already taken action in this particular area.

DOCTOR KERLAN: Mr. Duffy has a question.

ASSEMBLYMAN DUFFY: Dr. Kerlan, you say you do not believe that it would be proper for athletes, and I assume you mean all athletes, to take drugs to stimulate their activity before a game, is that correct?

DOCTOR KERLAN: Yes, that is correct.

ASSEMBLYMAN DUFFY: Why do you feel this? Do you feel that this is bad physically or do you feel that this is bad from the standpoint of not representing the athlete at his normal?

DOCTOR KERLAN: I think both viewpoints are important. I think, of course, philosophically I have already stated that I don't believe that this falls into the true nature of athletic competition.

ASSEMBLYMAN DUFFY: Is it your opinion--does the state then have a responsibility to be sure that none of these types of drugs are being used for athletic competition.

DOCTOR KERLAN: Well, that's a very interesting question and I don't even know if I can answer or if I am in a position to answer. Naturally, we would prefer I think--all of us would prefer--to have less direct control of situations. There may be indications on rare occasions to use medications of this type. I do think that if it cannot be controlled in an other manner then the state does have the role to play to protect the public, but I do think that it can be controlled and is being controlled and I don't believe that there is a major problem. I believe that an inquiry such as this is very important at this point. I think it is extremely important and I compliment you individuals for having it because I think if there is a potential problem, and I believe only that it is a potential problem, that the time to nip it is in the bud, not after this serious situation or serious type of situation has developed. I think this is very important. However, I do not think that at this point the state needs to make certain rules because these rules are being made at a lower level--at a level more closely associated with the sport.

ASSEMBLYMAN DUFFY: Will you be explaining these later in your testimony as to what is being done?

DOCTOR KERLAN: Yes, I hope to.

ASSEMBLYMAN DUFFY: And, also you say not at this point is state law necessary. Will you be directing yourself later as to at what point we should step in?

DOCTOR KERLAN: If you remind me I will try.

CHAIRMAN CAMPBELL: Okay. Mr. Stacey.

ASSEMBLYMAN STACEY: Dr. Kerlan, you separated these drugs into three different areas. Now, do I take it by this comment that in area number two where you talk about anti-bacterial, anti-inflamatories and the analgesics and local anesthetics that under a doctor's care and under his response that these would be alright drugs to use for instance in the case of Elgin Baylor if his knee's really bugging him to shoot him with novocain or something like this would be proper.

DOCTOR KERLAN: No, I don't hold with that exactly. I indicate that there are a vast group of drugs or medications which are extremely important and are helpful in their usage. This does not mean that because novocain is included in this group or xylocain that you would risk more serious injury, risk difficulties to the individual later in his career or after his career is over in order to make him function at this moment. I think first of all we must understand that there is a sub-specialization occuring at this time and that the treatment of athletic injury is being looked into and entered into by individuals at this time specifically interested in this aspect. There are sections of--there is a section of the American Academy of Orthopedic Surgery sports injury section which is very active and presents seminars throughout the country throughout the year that are attended by faculty which is very interested in this subject and has been doing this sort of thing for a long time. These would include men like Nicholas of New York, O'Donohue of klahoma, Alman of Atlanta and many others who are very interested in the program and do present the proper, at least what is considered to be the proper, ideas in care of athletic injuries. I think this subject has been neglected in the past and often times has not been closely supervised which has led to difficulties. However, getting back again specifically to your question on the usage of novocain, xylocain or other local anesthetic agents in the treatment of injury should be specifically up to doctors that have trained in this area.

Naturally, no injury should be masked and do not give medication just to allow an individual to perform even at the professional level.

ASSEMBLYMAN STACEY: Now let me ask you, if I remember the news article at the time you were Sandy Koufax's doctor--attendant physician. As I remember after practically every game he would have to come out and soak in ice his arm to keep him in fairly decent shape. Being a Giant fan, every once in a while we hate to see him come back every third day, but did he take medication in conjunction with it? For instance, like Butazolidin or analgesics along these lines continually to keep the inflamation and the pain down during the interim period or was the ice packing sufficient to do it?

DOCTOR KERLAN: No it wasn't. Sandy Koufax was bothered with traumatic arthritis in the elbow. His desire was to pitch and we tried to outline a program which was mostly physical treatments such as the ice after the game. Usage of anti-inflamatory material by mouth such as Butazolidin, this is not an analgesic per se, by reducing the inflamed area, reducing the swelling, then the part would function better. Naturally, there are side effects to Butazolidin and during its administration he had frequent blood counts to make sure he was not developing any side effects. That's what I mean by proper supervision of medications that are used. However, at no time was his elbow injected with novocain or xylocain to make it painless so that he could pitch and at no time was his future usage of the arm jeopardized. In fact, that's what led to his retirement. We were trying to judge the time at which he would have to stop pitching in order to insure the fact that he would be able to use his arm properly when he was through with baseball. I think this type of judgment is necessary in treatment of athletes.

ASSEMBLYMAN STACEY: Now let me ask you this. On the anti-inflamatories could it be said that he was continually using them right into the game so to speak?

DOCTOR KERLAN: He used them intermittently. He would use them for a day or two before the game and or a day before the game and the day of the game and the day after he pitched. He would be off the medication not for any reason except that he didn't desire to take it. There are many people with arthritis that take medication of this type and take them continuously and have for many years and it is very beneficial treatment. It falls into a category somewhat like aspirin although its a much more powerful drug with more potential side effects, but it is that type of medication. Therefore, it was considered a proper treatment for his problem.

ASSEMBLYMAN STACEY: Let me parallel it into another field just to get a judgment. If I remember right, and I am going to have to recall back three or four years ago, and I forgot the horse's name. I keep thinking of Native Dancer but I'm not sure, but anyway he won the derby and then it was shown that they had injected him with Butazolidin prior to the race, of course, which would relieve the inflamations and of course they disqualified him.

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In one case we're saying that the human can go ahead and use it but the horse can't. Now I don't happen to agree with the decision on it. Being a pharmacist and being acquainted with Butazolidin and many of these other drugs, I think that they are useful and that they really do not set up the body to a point where its going to further degenerate it afterwards. But when you get into something like stimulants and that stuff, I agree with you physicians.

DOCTOR KERLAN: Well, I think the Dancers Image case, I believe that's the name of the horse, offers some differences for certain reasons. I happen to be very interested in horses and have been closely associated with racing and have talked to many veterinarians and I think I know some of their problems also with their athletes--their animal athletes. Butazolidin happens to be an illegal drug to be used on a horse for other reasons than besides its being a stimulant. As a matter of fact they are allowed to use the medication in training a horse as long as they stop 48 hours before the race. Now the question here, it wasn't injected of course its an oral medication, but for the most part it was--the question was whether or not it was used. At least it showed up in the urine test. Now certain problems are encountered because of the rules for urine and saliva samples with horses. Some drugs aren't specifically--you cannot identify them. There are states which have ok'd the use of Butazolidin. Illinois did for years. I believe they discontinued that, but the reasons for it are unknown. Right now there is a battle going on between veterinarians, horse owners and people interested in racing in order to try and get drugs like Butazolidin and aspirin. You can't even give a horse an aspirin within 48 hours because they don't want any medication given because it then makes it too dificult to control. We don't particularly have that problem with athletes. I agree with you entirely that anything that stimulates performance should not be used I think if they are not dangerous to his health and I believe thats really a critical question here when you're talking about medications and drugs. I think the medications and drugs that are beneficial and allow an individual to perform so that the public is allowed to see this individual under normal circumstances is proper but anything else stimulated or depressed either area is bad.

CHAIRMAN CAMPBELL: Doctor, on some of the other questions...

DOCTOR KERLAN: I think Dr. Dooley addressed himself to the question of use of hormones. There happens to be some philosophical difference between doctors and usage of this medication. I have not reached the point where I feel that medications such as this are at this point in time specifically beneficial or free of side reactions enough to warrant the usage. I think perhaps further experimentation, clinical testing and laboratory testing may be necessary before it may become a valuable medication for usage in the future, but at this point I believe that we are not ready for it. At least it is included in the group that I would classify as stimulants, depressants, hormones mostly to gain weight and strength. There are side effects as there are with every drug...

I noted someone asked, is there a message on the drug label, or the circular that comes with it indicating side effects? There is for every medication. There isn't a medication that's used from aspirin on where certain side effects have not been recorded and recognized. It is important for the doctor to understand what these are and keep these under control. That is another key word, that's control. A patient must be controlled, the medications used by the supervising doctor should be well controlled.

I know there are other questions probably that you want to ask. I just wanted to address myself to question 8. Well, I also brought up--I said I would tell you about question 5, what has been the response to drug use among athletes by those organizations with the responsibility for regulating sports at the various participatory levels? That question, that is question 5, suggests the National Football League, Pacific Eight Conference and so forth. I believe all people--all of the administrators at every level--are interested in this problem and have had either formal or informal meetings about it. I believe that formal action has been taken, for instance, by the Pacific Eight. I believe they have outlawed the usage of amphetamines, anabolic steroids, marijuana, LSD and other drugs of that nature, naturally. But the amphetamines and the anabolic steroids would fall more in the classification of medication--medicines and they at least at this point have discouraged the usage or indicated they do not want them.

CHAIRMAN CAMPBELL: Do you know of any team that would use novocain or something of this form for the treatment of an injury, permit them to go back to the field or court?

DOCTOR KERLAN: Oh, yes. I know--I've done it under very selective circumstances. For instance, you take a sprained ankle in basketball. It happens frequently, and there are various degrees of strain and sprain. Say that we've had a sprain, that we've investigated it, we've taken x-rays and we find that there is no fracture. We've also taken stress x-rays to make sure that there is no actual stretching of the ligaments that it does not allow the bones to move. Oftentimes to take these x-rays we do inject novocain up to time to take them so that we can push them to their extremes. Therefore, have a way to judge as to whether the ligamentous injury is really severe. Now, if an individual is having pain which prevents normal performance, the ankle can be protected by taping and you can reduce the pain, for instance, by injection of a long-acting analgesic such as xylocain. You're there to observe the way he acts, what he does, and you have the ability to see if he is functioning properly with it, then I think it has a role to play. This becomes a matter of judgment by the doctor that's treating the patient. Again, not aimed, of course, at causing more serious injury or causing difficulties in the future as you brought up before, such as traumatic arthritis, and I think it has a role to play. It was carried to its extreme I believe, when, in the recent NBA playoffs where certain medications were given to the center of the Knickerbockers....

CHAIRMAN CAMPBELL: Willis Reed.

DOCTOR KERLAN: Yes, Willis Reed. And that was the philosophy of the doctor that was taking care of him. Obviously, there was no irrepaiable damage.

CHAIRMAN CAMPBELL: What kind of medication was that?

DOCTOR KERLAN: They used some type of longer acting local anesthetic. I was in New York at the time with the Lakers, but I don't know exactly what medication they used.

CHAIRMAN CAMPBELL: With that kind of a policy, though, and a situation where no x-ray was taken, nobody knew the extent to which the injury was, doesn't that raise questions about what kind of a policy one would have at that given time because you don't know whether it's a severe sprain, or a small sprain, or maybe some sort of break.

DOCTOR KERLAN: I think again, it's up to the judgment of the doctor involved. It is very difficult to make rules in this regard. For instance, if in a team, in a sport where you have violent body contact, let's say hockey. If we took an x-ray every time a patient had a severe contusion, or complained of severe pain or difficulty in moving a part, if we took an x-ray every time that occurred, we would have four or five x-rays to take out of every practice. We would have ten x-rays to take out of every game. Well, we've proven by experience in clinical judgment that this is not necessary. There's certain signs. X-ray is an adjunct as all other laboratory tests are. They're an adjunct to the most important thing, and that's the doctor's clinical judgment. That has to be considered. We are not yet at a point where we allow laboratory results to tell us exactly what to do. For instance, in x-rays, there are x-rays that are interpreted on patients on occasions that have been injured as showing a fracture. A man with experience might look at the x-ray and say this isn't a fracture, it's an old fracture, it's calcification from a previous injury. This again gets back to the judgment of the doctor. And I think that has to reign supreme at this time.

CHAIRMAN CAMPBELL: Now to question number eight.

ASSEMBLYMAN STACEY: Pardon me, Mr. Chairman. Doctor Kerlan, you mentioned that the Pacific Eight Conference, has made some determinations. Have the--like the NBA--the football leagues or anything, set any rules and guidelines on these drugs?

DOCTOR KERLAN: Yes, they have. But not in a way of making a directive from above. I talked to Walter Kennedy yesterday about this in the NBA, and they have instructed all of the team physicians to assume the responsibility and to be personally responsible for their club, and I think that's fine. Even though we can't control every medication that an individual may acquire, because he may take some medicine that his wife has on the shelf or may get it from outside sources, but of course, I believe that this is the proper way for it to be handled. Cooperation from above with an understanding of the people in charge of what the doctor is expected to do and is trying to do and cooperation together.

And, this does lead to an answer to number eight, which is, I believe, the key to the situation--education of the individual athlete.

ASSEMBLYMAN TOWNSEND: Doctor, before you leave that, what would you do if you found a player violating that rule?

DOCTOR KERLAN: I believe you have many, many recourses. I think suspension is one. It depends upon the way it has been violated, and how long this violation has occurred and just exactly what the situation is. I think a warning, to begin with, if it's a minor situation and give the player a chance to stop taking this medication, all the way to suspension--indefinite suspension, and perhaps complete suspension from further activity.

ASSEMBLYMAN TOWNSEND: Would you report it to the Association or to the coach?

DOCTOR KERLAN: I would tend to report him to the general manager or owner, probably. I think I'd discuss it, of course, with the coach. And I'd make sure that everyone in the organization understood. I don't believe that, you know, you tell the coach that this has occurred and then sort of hope that something is done about it. I think if it's serious enough to require some punitive action, then, I think that everyone should know about it that's involved with the club. And a decision should be made as to the seriousness of it. You may make your recommendations. I certainly can't, of course, suspend any athlete. But I may make recommendations to those that do have that power.

ASSEMBLYMAN TOWNSEND: What I'm trying to determine, doctor, is since you have the responsibility now, if I understood your testimony correct, at what point will you notify the Association of these abuses? Or will you ever notify the Association?

DOCTOR KERLAN: Now, you're talking about the governing body?

ASSEMBLYMAN TOWNSEND: Right.

DOCTOR KERLAN: For instance, with the Lakers NBA or with the National Hockey League?

ASSEMBLYMAN TOWNSEND: I understand that's where you got your directive from, is that correct? The NBA?

DOCTOR KERLAN: The directive is an informal one. One that's understood without--I don't believe any outline at this time of any action except at the discretion of the team involved. I do believe that they would be notified. I think that if you were going to punish a player, suspend him, naturally to suspend a player the League has to be advised of the reason. And, therefore, that would be automatically done. So in the more serious cases where suspension would be necessary, and I don't know of any cases of this type, as yet I think that would be the course to follow. There has to be some way. I don't believe that we have reached a point where we have to, of course, do urine tests and sputum analysis on players, but I think that some supervision is necessary.

I believe, in response to question eight, that the key to the situation is education of the individual athlete, and destruction of the myth surrounding the usage of such medication as amphetamines or other stimulants, then reaffirmation of the basic principles relating to conditioning and the true meaning of athletic competition in its purist sense.

CHAIRMAN CAMPBELL: Are there any further questions? Doctor Kerlan, thank you very much for your testimony today.

Is Doctor Blazina here yet?

DOCTOR KERLAN: I believe he's in surgery, and I don't know if he's going to be able to make it.

CHAIRMAN CAMPBELL: We wish the Lakers a very good year.

DOCTOR KERLAN: Don't forget the Kings.

CHAIRMAN CAMPBELL: Dr. Rasinski. Is Doctor Rasinski here? Dr. Rasinski is the team physician for the California Angels. Doctor Rasinski, do you have an opening statement?

DOCTOR J. V. RASINSKI: No.

CHAIRMAN CAMPBELL: I think then maybe we'd like to get right to some of the questions and ask you to respond to some of them. Basically, what we probably want to know more than anything else is what is the policy that you follow with the California Angels. What kind of drugs do you find used by the Angels, and to your knowledge is there any illicit use of drugs, or use of illicit drugs?

DOCTOR RASINSKI: I think the drug we used the most this previous year was Malox for Bill Rigney. (laughter and inaudible conversation)

CHAIRMAN CAMPBELL: Malox would be the kind of drug that would settle a very upset stomach.

DOCTOR RASINSKI: We have had no real drug problem with California's Angels. We have no use of amphetamines whatsoever. We don't prescribe them. And I don't prescribe them in private practice--any amphetamines or diet pills. So I have no problem at all with baseball players.

CHAIRMAN CAMPBELL: You do use the same sort of drugs that Doctor Kerlan spoke about?

DOCTOR RASINSKI: Anti-inflammatory agents, the muscle relaxants, but amphetamines are not used whatsoever.

CHAIRMAN CAMPBELL: Okay. You don't then. To your knowledge are they used by individuals on their own--to your knowledge?

DOCTOR RASINSKI: I'm sure there probably are some who do use them, because they know my feelings on it, however, I've never been asked for a prescription for them.

CHAIRMAN CAMPBELL: Yes. We're going to ask you to speak up a little more. We don't have a PA system, and some of the people are having a little difficulty hearing.

What is the policy of the Angels as it relates to drug use per se? If somebody is injured, do you use restorative drugs to a great degree, or what?

DOCTOR RASINSKI: Restorative drugs, do you mean cortisone?

CHAIRMAN CAMPBELL: Yes.

DOCTOR RASINSKI: Yes, we do, for a shoulder, elbow problem.

CHAIRMAN CAMPBELL: What are the side effects of cortisone, if any?

DOCTOR RASINSKI: Over a long term use, the features that would tend to diminish the use of a patient's own adrenal gland. Some of the medical terms are difficult to explain here. Fluid retention would be one. Weight gain. They're more susceptible to infections. This is someone that's on it for a long term and using it daily, usually by mouth, by pill.

CHAIRMAN CAMPBELL: Used by pill rather than injection?

DOCTOR RASINSKI: No, we don't use by pill.

CHAIRMAN CAMPBELL: You don't use by pill at all.

DOCTOR RASINSKI: No.

CHAIRMAN CAMPBELL: What would be the policy that you would follow then? Are the guidelines set down by the National American League as it related to drug use?

DOCTOR RASINSKI: We've never received any formal statement at all about this--formal or informal--from the American League.

CHAIRMAN CAMPBELL: Do you, as team physician to the Angels, are you team physician to any other sports team?

DOCTOR RASINSKI: Yes, I am.

CHAIRMAN CAMPBELL: What others?

DOCTOR RASINSKI: Los Angeles Rams.

CHAIRMAN CAMPBELL: The Rams? You know, I would assume that there is the same policy existing for the Rams as exists for the Angels?

DOCTOR RASINSKI: No, not from a single use or over a period of even using weekly. Somebody is using something daily, every day, for say, through a whole season, certainly there could be problems. But this does not seem to be the case.

CHAIRMAN CAMPBELL: So, you say, in the football area, you do have established medical policies that you use that are set down by the NFL basically or do the team physicians just get together?

DOCTOR RASINSKI: No. We get nothing directly from NFL.

CHAIRMAN CAMPBELL: So you kind of operate on your won, but you informally work together on.....

ASSEMBLYMAN TOWNSEND: Well, Mr. Campbell.....

CHAIRMAN CAMPBELL: Yes.

ASSEMBLYMAN TOWNSEND: Why don't you have rules dealing with medical matters out of the NFL?

DOCTOR RASINSKI: I was told before not to bring.....

CHAIRMAN CAMPBELL: Yes. Let me at this point introduce a letter from the National Football League to the committee and we'll enter this into the record. It will be a part of the record.* But the National Football League is now involved in a law suit and does not want to get involved in questions to the specific policy of the NFL per se.

ASSEMBLYMANTOWNSEND: Maybe I can ask him as a member of the doctors?

CHAIRMAN CAMPBELL: Well, I think at this point, out of courtesy to the NFL we will skip that. If we can circumvent that, I would appreciate it.

ASSEMBLYMAN TOWNSEND: May I ask you another question, doctor? Why doesn't the--is it the ABA--how about the baseball association?

DOCTOR RASINSKI: Yes, sir, the American League.

ASSEMBLYMAN TOWNSEND: Why don't they have any medical directives about.....

DOCTOR RASINSKI: I'm not familiar with their governing boards or with their policy set-up. I can't speak for the organization. I'm employed by the California Angels.

ASSEMBLYMAN TOWNSEND: It seems ridiculous since they have rules governing almost every other aspect of the profession, they must be concerned about drug usage amongst the players.

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*See Attachment I.

DOCTOR RASINSKI: Something new is starting this year in baseball. We're forming a professional team physicians association. It's going to be meeting for the first time this year in Los Angeles at the winter league meetings in November. We have the same organization in football. We met for the past three years, I believe, yearly meetings.

CHAIRMAN CAMPBELL: Let me ask you this. I think drug use or even--would be a little different between football and baseball. In baseball you have a 100 plus games scheduled, where in football you have a very small, ten to twelve games. So an individual if he misses one game, he misses one-twelfth of his fees or one-tenth of his fees or something like that. So his ability to participate becomes much greater, say, between basketball and baseball as it is related to football. Do you treat the football player any differently if he has an injury? Would he take a greater chance with an injury on a clinical observation?

DOCTOR RASINSKI: Different type of injuries in football like you pointed out. It's more of course a violent sport, with more contusions, ligament strains, than you get in baseball. These are treated like you would treat a patient, for instance, with cortisone, and xylocaine at the time of injury. Not--well the day following injury. Nothing is ever given at the time of a game. Like Doctor Kerlan brought out, we've never used xylocaine to numb an area so a player could make plays.

CHAIRMAN CAMPBELL: So you don't use any deadener-type of drugs.

DOCTOR RASINSKI: No.

CHAIRMAN CAMPBELL: Do you ever use novocain? Do you use morphine?

DOCTOR RASINSKI: Xylocaine, which is a form of.....

CHAIRMAN CAMPBELL: But morphine.

DOCTOR RASINSKI: no.

CHAIRMAN CAMPBELL: Do you see any danger or potential danger in the use of drugs by a coach?

DOCTOR RASINSKI: Well, in proper use, if they're not instructed properly in the side effects of medication, I think they're certainly a possible hazard. However, we've never had that problem in baseball.

CHAIRMAN CAMPBELL: Are there, to you knowledge, any studies that would go into, say, the long range effects of the use of something like cortisone or even anti-inflammatory kinds of drugs? You know, you use one time. Are there long range side effects that occur as a result of that?

DOCTOR RASINSKI: Well, they feel if the physician is an ethical physician, this will not be a problem.

ASSEMBLYMAN TOWNSEND: Well, you put in a word there that kind of throws me off. You said "if". Do you think that all physicians are ethical? Well, you don't have to answer. Your hesitation answered for me.

DOCTOR RASINSKI: Pardon me?

ASSEMBLYMAN TOWNSEND: You don't have to proceed. Your hesitation answered that question.

DOCTOR RASINSKI: Well, it was sort of a general question.

ASSEMBLYMAN TOWNSEND: I thought it was specific, doctor. How specific do you want it?

DOCTOR RASINSKI: All right. I believe all physicians are ethical. Politicians are ethical. It's general.

CHAIRMAN CAMPBELL: Mr. Stacey, you had a question.

ASSEMBLYMAN STACEY: Well, my question along that same line is, do you feel then that by the physicians getting together, you really can trust one another to maintain the rules and everything that you basically set out. I've had an indication from all the individuals that testified so far that work with professional teams that they run a pretty ethical place where you could trust the fellows that you're competing with.

DOCTOR RASINSKI: I work very closely with Doctor Kerlan, as you mentioned. I have taken players to his office and we converse quite often over the phone over injured players. I'm very fortunate in having someone of his calibre in the area that I can use for consultation.

CHAIRMAN CAMPBELL: Let me ask you this , doctor. The real essence of sports is matching essentially the natural ability of individuals. Do you or to your knowledge, any of the teams use any kind of drugs that would give an unnatural advantage to any one team or individuals?

DOCTOR RASINSKI: Not to my knowledge. You'retalking about baseball?

CHAIRMAN CAMPBELL: Yes. Are there any further questions? Assemblyman Duffy?

ASSEMBLYMAN DUFFY: Did you testify that you feel this problem can be solved by the physicians themselves policing their own teams?

DOCTOR RASINSKI: This is a very good way to do it. I think that any education program for the players is very beneficial.

ASSEMBLYMAN DUFFY: Okay. But now what if someone else is using--an athlete is using the drugs--a drug or stimulant, for example, not that you prescribed. I'm not impugning your motives at all, or your ethical background. But it was obtained somewhere else, either legally or illegally. What would you do then?

DOCTOR RASINSKI: I would first tell the coach, and of course tell the general manager also. We're employed by the general manager. And we have an understanding at the Angels that we will not use anything like this. If it comes to my knowledge that this is being used, then I'm supposed to tell him.

ASSEMBLYMAN DUFFY: Now, if they did nothing, then what would you do?

DOCTOR RASINSKI: I don't know what else I could do.

ASSEMBLYMAN DUFFY: Now, isn't that the heart of the problem that we're facing before this hearing? What do you as a reputable physician do to protect the public in the professional sport when you have information that someone is using drugs which are frowned upon by your particular organization and nothing happens.

DOCTOR RASINSKI: I think if you pursue it any further, if you notify the press, then you're breaking your doctor-patient relationship.

ASSEMBLYMAN DUFFY: Naturally. And so, therefore, there is really in the final result--now I can picture a penant drive, and I can picture an athlete who is in his last year of competition who perhaps needed the money, perhaps needs the ego-building effect--I can see where it would happen to an individual. I can see where it would be very difficult for an owner of a professional team to blow the whistle on this individual. Can't you?

DOCTOR RASINSKI: Yes.

ASSEMBLYMAN DUFFY: As a human being. So in effect, aren't you saying it would be possible for nothing to happen. Now, do you feel in view of that that the state should be setting up some standards to be followed by professional athletes?

DOCTOR RASINSKI: I don't know if the state can do this. I think the best way to do would be to--I think a large governing body like the AAU, the Olympic Committee, the NCAA.

ASSEMBLYMAN DUFFY: You feel someone should rather than just the team itself or the League itself.

DOCTOR RASINSKI: I think it has to come from a body of this sort.

ASSEMBLYMAN DUFFY: Well, of course, the state could do it. I'm not saying that they couldn't. But you feel that something should be done on a larger basis than simply the League or the team.

CHAIRMAN CAMPBELL: Any further questions? If not, doctor, thank you very much. Doctor Siler. Doctor Siler is the team physician for the San Francisco Giants. Thank you for traveling down here today, Doctor Siler. Have you heard most of the testimony here this morning?

DOCTOR ELDOR SILER: No, I have not. I just came in about fifteen minutes ago.

CHAIRMAN CAMPBELL: Okay. Do you recall the questions that we submitted to you for your perusal? I think what we would like to ask you, what is the policy of the San Francisco Giants as it related to the use of drugs. What kind of drugs do you mostly prescribe for your team members and the follow-up on the recent question--what do you do if you find an individual on the San Francisco Giants who utilizes--surreptitiously utilizes say, morphine, amphetamines, barbiturates?

DOCTOR SILER: You're asking me what drugs we generally use, not in the use of category of drugs?

CHAIRMAN CAMPBELL: Yes. Right. Just the general use.

DOCTOR SILER: Well, I think that it's much the same as we would use in private practice. That's my policy. To treat the athlete as I would treat a private patient. We do not use drugs or prescribe drugs or prepare the patient or the athlete who is injured or who is ill so that he will be able to go on the field and play. We use cortisone under selective situation, again, not as an immediate corrective measure so he can participate that day or get back sooner. Use the ordinary pain pills--we use Darvon, we don't use codeine. We don't inject novocain to get the player back on the field.

CHAIRMAN CAMPBELL: You do not use novocain.

DOCTOR SILER: Not to inject the injury or joint to get the player back on the field so he can continue to participate that day or even the next day if it looks like this would be a longer interval required.

CHAIRMAN CAMPBELL: All right. You don't use amphetamines?

DOCTOR SILER: We do not. We do not have them available. I do not prescribe them. As far as I know, the trainer does not have them. I'm very much opposed to the use of stimulants in sports.

CHAIRMAN CAMPBELL: How about anabolic steroids? Do you use them at all?

DOCTOR SILER: No, not at all.

CHAIRMAN CAMPBELL: Not at all. Do you know of any of the players that might be using amphetamines of some kind?

DOCTOR SILER: If you are asking me if I feel specifically that any player is on--I would have to say no. I would have to say that I have been told there are some who take one now and again, and particularly this would happen the day after a night game. Other than that, I've only had one experience where a player has used them abusively.

CHAIRMAN CAMPBELL: And what did you do in that case?

DOCTOR SILER: When he was confronted with it and was approached on it, with admission there was clarification, and I would say that probably he was not using them now, not grossly, anyway.

CHAIRMAN CAMPBELL: You say probably. You're not really sure?

DOCTOR SILER: He's not on the team.

CHAIRMAN CAMPBELL: Is he on any other team?

DOCTOR SILER: Yes.

CHAIRMAN CAMPBELL: Did you notify the team, the other team at the time of the trade, were they notified of the fact that this individual had a problem with amphetamines?

DOCTOR SILER: I would have to go back a little bit further and qualify this by saying that in this particular individual there were extenuating circumstances. There was a great problem mentally and businesswise, and I think this probably was the contributing factor, the main factor in his doing this. He's a very fine person. I think that he, as well as I knew him, would probably have, since his problems are solved, have resolved this, too.

CHAIRMAN CAMPBELL: That's possible. However, don't you develop a physical dependency with amphetamines?

DOCTOR SILER: Yes, very considerably, but person to person that certainly does happen.

CHAIRMAN CAMPBELL: And wouldn't it be very difficult to withdraw from amphetamines?

DOCTOR SILER: Again, it would be a very individual situation. This is one of the problems with amphetamines is that you can't predict the tolerance of an individual.

CHAIRMAN CAMPBELL: My question is--my concern would be--knowing of the problems that existed there, the fact that you would make known to the other team that this problem was there so that they could maybe help the athlete out, in trying to overcome the problem.

DOCTOR SILER: I think that's a very good point. We haven't done that. I think this will be evolved and developed. I think that one of the other doctors that spoke here a little bit ago brought up the point of team physicians now having an organization which will help tremendously in communications amongst the doctors and set up some principles and guidelines to follow.

CHAIRMAN CAMPBELL: There's nothing from League headquarters to control the utilization of drugs, illegal or abuse of drugs or the use of illegal drugs?

DOCTOR SILER: Not to my knowledge.

CHAIRMAN CAMPBELL: Nothing at all. Assemblyman Duffy.

ASSEMBLYMAN DUFFY: Doctor Siler, you say that you oppose the use, for example, of amphetamines for athletes. Is this on the basis of the physical effects only, or because of the bad effects for the sport itself?

DOCTOR SILER: I would have to say that my concern would be with the individual.

ASSEMBLYMAN DUFFY: I see. You aren't concerned then at all with the fact that you might be having some athletes who are performing potentially at a higher level than they would be. This is not your concern?

DOCTOR SILER: I don't quite understand what you mean by that. Am I worried because somebody else's athlete's going to perform better because he's taking the drug?

ASSEMBLYMAN DUFFY: Well, are you concerned at all with the concept of sports, that what you're measuring in sports is an individual or a team's ability to perform, and are you concerned with the fact that by use of some of these stimulants and other drugs it might be possible to have someone performing not at their normal level? Does this concern you at all?

DOCTOR SILER: That as a result of taking the drugs, he's not performing?

ASSEMBLYMAN DUFFY: Yes.

DOCTOR SILER: Certainly it does.

ASSEMBLYMAN DUFFY: All right. So you are concerned with the sport in general then?

DOCTOR SILER: Yes, Certainly.

ASSEMBLYMAN DUFFY: Well, do you feel that it is possible for you as an ethical team physician--did you hear my questions to the previous physician, Doctor Rasinski?

DOCTOR SILER: I heard only some of it.

ASSEMBLYMAN DUFFY: Well, let me ask you the same question. All right, now if you found that there was some athlete on your team who was using--you believed they were using amphetamines. for example, what would you do?

DOCTOR SILER: Well, I guess, it's been answered by--what was said a minute ago. I would réport it.

ASSEMBLYMAN DUFFY: You would report him. Now, what if they did nothing? The athlete did nothing and the management of the team did nothing? What would you do then?

DOCTOR SILER: Well, I don't really know where I'd go.

ASSEMBLYMAN DUFFY: There's nothing you could do, is there?

DOCTOR SILER: I would report it to the Narcotics Bureau. I don't think so. I don't know where you really would go. That's right.

ASSEMBLYMAN DUFFY: It would be difficult. Perhaps even impossible for you as a reputable physician visualizing the doctor-patient relationship, it would be very difficult for you to report it.

DOCTOR SILER: It's a matter of confidential information, too.

ASSEMBLYMAN DUFFY: And yet at the same time, it could be hurting the sports, couldn't it?

DOCTOR SILER: That's right.

ASSEMBLYMAN DUFFY: All right. Now with that in mind, do you feel that it would be--that there is a need for some overall standards by someone, prohibiting the use of drugs?

DOCTOR SILER: Well, I would guess so. There are standards for using narcotics. I think it would come under the same sort of regulation, perhaps.

ASSEMBLYMAN DUFFY: You say the state ought to do it?

DOCTOR SILER: I am not in a position to answer that. Again, I think in this state, barbiturates, for instance, come under the Narcotics Act.

ASSEMBLYMAN DUFFY: Let me take another example. Now, it would be entirely possible there are some physicians, and I think you will agree with me, who have in the past, at least, been quite indiscriminate on their prescriptions of amphetamine, correct?

DOCTOR SILER: I would have to say it is true. We all know that to be true, not wise, but there have been unwise physicians and unwise politicaisn.

ASSEMBLYMAN DUFFY: It would be possible for a person performing in baseball with a legal prescription wouldn't it?

DOCTOR SILER: This is possible. I don't think this is a very large percentage of the availability of the drug, and I think that this is in part being solved right this month by the FBI who has issued a directive that physicians can write amphetamines only to three categories of disease: one is narcolepsy, that is catapulsive sleepers; the other one is hyperkinetic bahavioral patterns in children; and the other one is short-range use of amphetamines for obesity. So this in itself is going to, by law, take care of this big segment of drugs.

ASSEMBLYMAN DUFFY: Let me ask the Committee Consultant a question. Will the FDA regulations prhibit the legal use of these medications for any other categories than these three?

MR. STEVE THOMPSON: There's none contemplated at the present time. They have the authority to provide guidelines usually in the experimental drug category which can define a particular drug use. To date that has not been done.

ASSEMBLYMAN DUFFY: But if they did have such a regulation, then the drug could not be used by physicians except for those categories, such as.....

MR. THOMPSON: Then the question, of course, comes to enforcing it.

ASSEMBLYMAN DUFFY: Yes, I understand that. Thank you.

CHAIRMAN CAMPBELL: Are there any other questions? Doctor Siler did you have anything else you would like to add?

DOCTOR SILER: The only thing I would like to add, that we have done is one thing which I think is very good from an educational standpoint. This spring we invoked the idea of going to spring training and giving a talk to the team on the use and abuse of drugs. We extended that a little bit further and went to Casa Grande where all of the Giants', minor team leagues meet and practice, and the same thing was repeated there. I might say that the players were very interested in it. It was stimulating and I think the educational approach for this thing probably will do more than a lot of others.

CHAIRMAN CAMPBELL: Thank you very much, we appreciate your coming down today. Has Dr. Balzina arrived yet? If not, the hour has approached 12 o'clock. This committee will recess until the hour of 1:30 p.m.

This afternoon the lead-off witness will be Mr. Dave Maggard from Berkeley, followed on the list here by Paul Lowe, Robert Baxley, Gene Donnelly, Jack Scott, and Dave Meggysey.

This meeting will stay in recess until the hour of 1:30 p.m.

AFTERNOON SESSION
1:30 P.M.

MR. DAVE MAGGARD: I assume you would like to know something about the questions.

CHAIRMAN CAMPBELL: That's right.

MR. MAGGARD: I really haven't made detailed answers on all of these ten questions, but I have looked them over and prepared to answer questions that anyone might have. I see this first question here.

Personally, I do not feel that the drug problem is a tremendous problem, at least from the standpoint of the amateur, the amateur athlete, in track specifically. I don't think it's a tremendous problem today, but I think because of the fact that athletes are not immune to the ills of society, I think it is a real concern because of the problems that we are involved with today. It's rather obvious, statistically and so forth, that we do have a drug problem in our overall society. I don't feel that the problem as far as drug usage, is as great a problem as some might suspect. Now I am not speaking for the professional athletes nor for any sports other than track and field. Although I did compete in football at the University of California, track as well, I am speaking primarily from the track and field aspect of it.

I think that we would probably be concerned with two, basically two drugs, and that would be the amphetamines and the anabolic steroids. To my knowledge I have never seen a track athlete, as far as I know, on amphetamines. Now I saw one at one time during my competition days who I thought was on amphetamines, but because of the fact that we have at the University of California one of the finest team physicians I think in the country, we have an outstanding trainer, and one of the things that's always been very impressive to me, even my playing days and competition days at the University of California, is the team physician and the trainer regulate this type of thing. In other words, if an athlete is injured it is up to the team physician and trainer to determine whether or not this boy competes.

As far as medication is concerned, none of this comes under the coach's jurisdiction, nor the athlete, nor the trainer, for this matter, this is all--any type of medication--would have to be prescribed by the team physician and, of course, this has been a very impressive thing to me, as I said, during my competition days, also as a coach at the University. So I think, as far as I'm concerned, I have seen, in fact I attended a meeting for the athletic director about a month ago up in Portland, Oregon, and this was pertaining to drug abuse and how we might attack this problem. A lot of things are being done in Pac Eight right now, pertaining to this great problem. I think that perhaps someone might be able to come up with some statistics. I don't know what type of studies have been done on this. I think the concern more than anything else is just the population at large, and I don't think athletes, if they are involved with drug usage, are getting drugs from team physicians and trainers; this is something they are picking up someplace else.

CHAIRMAN CAMPBELL: Let me interrupt at this point. I think it has been suggested that there are quite a few athletes who are their own pharmacists, i.e., that they have their own little superstitions and rumors run very rampant through locker rooms that if you use this kind of a pill or that, such and such is going to happen, and I think the comment is that almost every athlete has a certain belief that a certain kind of pill is going to do something for him. Many of these pills are picked up not through the team physician, through maybe another physician.

CHAIRMAN CAMPBELL: As a former competitor what incidence, what amount of use of this kind have you seen?

MR. MAGGARD: I don't think it would be great among track athletes, I really don't. One of the drugs that has been very controversial in the last few years has been anabolic steroids, of course. This is something which you say is very true. I think that those who have been involved with anabolic steroids may not get their supply from one physician. For example, physicians recommended the usage of anabolic steroids in athletics some years ago. I think that doctors and physicians have backed off on this in the last two or three years. I think that this is very correct, what you say, and that is the source may be something other than the team physician and the trainer. Right now I don't think it's considerable, particularly the amphetamine part of it. Now, at the Olympic games, they checked the urine samples in the top six finishers in Mexico City, and from those samples, I don't know if they found anyone who was on "drugs"--amphetamines or whatever. Now testing for anabolic steroids is very difficult. This is something that would have to be, from my understanding, from talking with doctors and etc., this would have to be done over a period of time, in order to check the level of testosterone. So, this would be something that would be very difficult to do, and I think that as yet, there just isn't enough information on this type of drug at this particular time, and this is something I would like to see. I would like to see some long-range studies done on the use of anabolic steroids.

CHAIRMAN CAMPBELL: Do you think that anybody has had any adverse side effects from anabolic steroids?

MR. MAGGARD: No, I don't. In fact, I would wonder how many people in this room would know what the adverse effects would be. The adverse effects supposedly are liver damage, perhaps long usage sterility, and suspected hardening of the arteries at a later date because there is an increase in blood pressure. But I think that looking into something like this, you have to have information as to what anabolic steroids are supposed to do for the athlete. I understand that Dr. Dooley talked a little bit about this this morning, but I don't think it's been established as of yet just exactly what the harmful effects are for the anabolic steroids. I think now that the athlete would stay away from this in most cases because of the unknown effects in later years.

CHAIRMAN CAMPBELL: Does this drug vary from sport to sport, say from track and field to football?

MR. MAGGARD: I'm sure it does. Now, I do not have any statistics to back this up, but I would guess that it would. Going back to this other thing, I think that you would be as apt to find someone taking drugs who finished in last place. I think that by and large the outstanding athletes in track and field are those who would not rely on this type of thing, but I would guess that this would vary from sport to sport, and I would imagine it varies from level to level. In other words, the athlete who is out of college and away from the team position, I would guess that this would have its effect as well.

ASSEMBLYMAN DUFFY: I can see that there is a difference between sports and between amateur and professional athletics. Let me ask you--do you know of any track coach that if he found that someone was using amphetamines would not insist that they desist?

MR. MAGGARD: I can't think of anyone offhand, no.

ASSEMBLYMAN DUFFY: Can you imagine this occurring in football--where the rewards for the coach and the player himself can be measured directly in dollars?

MR. MAGGARD: I think this is going to be an individual thing. I don't think you can make a generalization like this. I think you would have to know the situation pretty well. I don't think I would be prepared to answer on that part of it because I don't know what goes on in the football world. The only thing that I would be doing would be guessing, and my guess is this: because of the fact that maybe there have not been guidelines, professional athletics may be a little bit different than amateur athletics, without a doubt.

ASSEMBLYMAN TOWNSEND: Do you think that we should prohibit the use of steroids particularly in the athletic field?

MR. MAGGARD: I would answer yes to this. I would say this--that we're talking about restriction from thestate level. I think that it has to be broader than this. I think the NCAA must be involved in this. I think the International Olympic Committee must be involved in this. I think the AAU--someone mentioned that they wanted the AAU to be involved in this. I think that there was a doctor before I spoke. Obviously, AAU has no jurisdiction on professional athletics. I think this would have to come from the league or whatever. I definitely think that this should be very restricted until a time in which there is further evidence as to what the long-range effects are on the usage of steroids.

ASSEMBLYMAN TOWNSEND: Have you noticed any of the high school kids coming up, have you noticed whether they've been on one of these drugs or not?

MR. MAGGARD: I have never noticed this in a high school athlete. I coached at the high school level as well. And, I think the high school athlete is very curious. I think all athletes are. I think that if an athlete goes to the Olympic Games and suspects that or if there is talk about using drugs, I think that obviously they are very curious about this and they want to know what the athletes are doing. I think that the high school athletes are very curious, and I am sure that they are to some extend influenced by people at the college level and even on up to pro level, so I do not know of any situation in which--I have never seen any--it may take place. I do not know of it personally.

ASSEMBLYMAN TOWNSEND: It would be a rare case that you're aware of anyway.

MR. MAGGARD: I would say that it would be, yes; I really would. This would be my guess. Now I would guess that the athlete who is not so well endowed or someone who is playing third string or fourth string would be as apt to do something like this as anyone else. I think that the athlete who is looking for a crutch is the athlete who might be involved in this type of thing. I personally think that your real top notch--now I'm speaking here again track and field--I don't think that the top notch athlete is involved in this to a great extent.

ASSEMBLYMAN TOWNSEND: We've read some newspaper articles which indicate that a scout, for example, after he signed up a potential player for his college would give him some steroids to take because they're good players, they just want to pick up 15 or 20 pounds.

MR. MAGGARD: I've heard of this as well. I think without a doubt that some of the outstanding weight men all over the world have been on steroids. I think this is common knowledge, but I think it would be very difficult to know just exactly who.

CHAIRMAN CAMPBELL: Weren't some of the weight men recently disqualified for the use of steroids?

MR. MAGGARD: They were weight lifters, and supposedly the usage of anabolic steroids came from the European countries from primarily weight men. Now this is not just weight men who were involved in this type of thing. Runners have been supposedly using anabolic steroids, and I think that some of the articles in magazines, etc., have pointed out that perhaps some of the pro football players which here again I don't think that there is a lot of substantial evidence for this. I think that much of this is guesswork. But, I can only speak from the track standpoint. And particularly the amateur aspect of it.

CHAIRMAN CAMPBELL: So your comment there is (in regard to track) you know of no real abuses of amphetamines.

MR. MAGGARD: I know of no abuse in amphetamines. Now this doesn't mean that it's not there, but I know of none and perhaps I know of none because of the type of situation I feel we have, which I think is a very good situation with the team position and the trainer. The "Pac Eight" is very much aware of dealing with this type of problem. In fact, I think that probably what they will be doing is having some spot checks throughout the year.

CHAIRMAN CAMPBELL: What's the policy of the Pac Eight if they find that an athlete is using, say, amphetamines?

MR. MAGGARD: Well, I think this would have to be something that would be a future policy, but I think right now there is talk and we talked about this at the athletic directors' meeting. I represented Mr. Breckler: The trainer would be dismissed and if the coach were advocating drug usage that he would also be dismissed, that it would be up to the Athletic Director to enforce this, and perhaps the boy dismissed from the team. These are things that have been talked about.

CHAIRMAN CAMPBELL: This is just in the talking stage. You don't have a set policy at this time?

MR. MAGGARD: At this particular time we do not, but we're forming guidelines at this very moment, and all of the Pac Eight doctors are involved in this talk right now. They met this past summer, in fact, last spring. So the awareness is very much there, and I think a real desire to cut the problem off before it really becomes a problem.

CHAIRMAN CAMPBELL: Any more questions? They thank you very much for appearing here today. We'd like at this time, going a little bit out of order, and call Mr. Gene Donnelly, trainer of the Anaheim high school.

GENE DONNELLY: Originally, I thought that when I received the letter and also the phone call from Steven Thompson that I would probably thank you for inviting me to appear before this group. I walked in today and took a look around to see all these important names, TV cameras, etc. It shook me up just a little bit, and then one of the gentlemen from the TV stations said, "I think I'll go get my shotgun." I knew damn well that I made a mistake then.

I'm going to try to speak in terms of the use of drugs in high school athletics. I think the first thing we have to do is to establish that the problem does exist. It does exist, it's here with us. However, we have to talk about degree.

CHAIRMAN CAMPBELL: Before you go any further, Mr. Donnelly, let me suggest this. I think this committee has studied pretty well in depth the increase of use of drugs by young people. I think that one of the things that concerns us is directly with the increase of uppers and downers, halucinogens and things of this nature by the teenage category. It's come to our attention that you also had an increase in the use of uppers or amphetamines by athletes because it's there in that age group anyway. The use is there, and thus it has fallen over into the high school athletics. So, I think we'd like to, if we can, get your thinking on that. To your knowledge, has there been an increase in the use of amphetamines by high school athletes? And the other side of the coin is, do you or are you aware of high school athletes using anabolic steroids? Are you aware of any adverse effects or anything of this nature?

MR. DONNELLY: Well, I'll say it. I think this has to go along sometimes with the incident of exposure. I checked with our local police department. We work very closely, that is, through administrators, with the local APD. I have some figures I'd like you people to take a look at, and then you'll understand what I mean by incident exposure. In 1961, for example, there were two young adults, that is, teenage type, arrested in the city of Anaheim for drug abuse or drug use or exposure. In 1969, there were 843. Now, this is fairly standard throughout the country, so what I mean by this is, the incident of exposure is certainly greater among the campus, normal campus student; therefore, the incident among the athlete is going to be greater. Now, have I or do I know of instances whereby an athlete has been exposed to uppers, the whites? Yes. We have had in the last two years two cases whereby we knew about it. The kids themselves, we try to put it on a basis whereby the athletes themselves fairly well regulate this, and you talk to the kids, and they will tell you it's anywhere from zero to 50 percent of the kids have played with it. You talk to the administration, the coaches, etc., and you'll find out that maybe they'll say that there are one to two percent of the athletes. Now, we're talking about all types of athletes. The gentlemen before me, Dave, talked about the difference in one sport or another. There is definitely a difference. I think football, being a game of hard knocks -- I agree with what he said regarding the numbers or the type of individual that would take this, and that would be because it's the third-stringer, the second-stringer that's trying to improve himself. Somebody's done a hell of a job at selling these kids on the idea that drugs will not hurt you or drugs will help you, marijuana, for example. If you want to sit down sometime and have a heart-to-heart talk with some of the kids, try to defend, as a teacher, as a coach, as an administrator, try to defend or convince the kids that the use of marijuana is bad. You have people nationally, on a state level, that have come out in favor of the use of marijuana, legalization. I think a couple of years ago--I could be wrong on this, but I'm sure you people would be informed on it--in the National Food and Drug Administration, or somebody, made the statement that the use of marijuana was not particularly bad, and these kids will throw it up in your face.

CHAIRMAN CAMPBELL: That wasn't quite what Dr. Goddard said, but, continue anyway.

MR. DONNELLY: Well, but he said that there was no adverse affect or that there was no knowledge of adverse affect.

CHAIRMAN CAMPBELL: I don't think that was what he said, but, anyway that was the way it was interpreted. I'll stipulate to that.

MR. DONNELLY: I think the one thing we need along this line then would be for people in a position of responsibility whereby certain rules and regulations can be made is a means to test the kids. Dave mentioned it. Give us a test. Give us something that you know he knows. All of these people that appeared on this panel before know that there are kids, people, athletes playing with this stuff. It's extremely difficult to find out who they are. You will know who they are, but try to prove it.

CHAIRMAN CAMPBELL: What's the policy of the CIF if they find a youngster using drugs in competing, say, amphetamines?

MR. DONNELLY: The policy here would fall under the scholastic and citizenship eligibility. There is, to my knowledge, no direct statement in the blue book that says: for drug abuse, period. We have, for example, in our league just recently put in a rule where if a kid is ineligible in one school in the league, he will be ineligible in another school in the league. This was done for a variety of reasons, one of the reasons being that if a kid was caught using drugs in athletics, he could not transfer from one school to another and be immediately eligible. I don't know if it would stand up in a court of law if somebody tried to force it or not, but it's a shame that more of the league--(don't enforce it)--Dave mentioned again that the Pac Eight is now working on it. It's a rough question. Where do you go? What do you do?

CHAIRMAN CAMPBELL: Do you have a policy in the CIF?

MR. DONNELLY: Do we have a policy? Only under the scholastic and citizenship eligibility.

CHAIRMAN CAMPBELL: But you don't have a policy that directly directs itself to the use of drugs per se?

MR. DONNELLY: Not to my knowledge, no.

CHAIRMAN CAMPBELL: Are you working on one at all? Is it under discussion at all?

MR. DOnnelly: There's a gentleman here from the CIF. Perhaps you should ask him that question and he could tell you. I do not--Tom?

CHAIRMAN CAMPBELL: No, that's all right. We'll get to you later. On the two cases, what did you do in your school district on the two cases of individuals who were, you found, using in this case, amphetamines, is that correct?

MR. DONNELLY: Yes.

CHAIRMAN CAMPBELL: What policy did you institute at that time?

MR. DONNELLY: The thing that we did--and, right, wrong or otherwise, there are certain policies that our school district has--and if you're interested in that, I'll tell you about it later. But, in both cases we called the kids in with the parents. One of the students was found in practice, and the other one was found in a ball game. We suspected him, and we went in and shook down the lockers. In both cases we found a roll of whites. We called the parents, had the parents come down, confronted the students. They admitted the use, and we turned them over to the parents with the idea that if they could show by performance--and we informed certain members of the team of this so that the kids would know about it--and if they could live by the rules from there on in, nothing would happen. One of the kids at the present time is playing in a college, in the state of California and, I understand, doing a whale of a job. Our philosophy has been: probably the easiest thing to do is to flush the kid, dump him, forget him; the hardest thing to do is to keep him around and try to straighten him out a little bit. We've tried to sell our kids, our team members, on the idea that they run the discipline. They'll know a lot sooner than their coaches who is and who is not playing around with any type of drug. And if we can continue to institute--and I say "we"; I'm talking high school, but every school in the league, I think every school in the county is trying the same thing--that if the kids can learn to handle their own discipline, this is going to be a big step in the right direction.

CHAIRMAN CAMPBELL: Mr. Townsend.

ASSEMBLYMAN TOWNSEND: Mr. Donnelly, did you open--did you check all of the lockers at the time you........

MR. DONNELLY: No, definitely not. We suspected the one kid, went in, opened up, and there it was.

ASSEMBLYMAN TOWNSEND: Well, we have an article here where they allege that the lockers of the Anaheim, California football team were searched last fall.

MR. DONNELLY: Not all lockers, no, sir.

ASSEMBLYMAN TOWNSEND: Well, there was more than one, is that right?

MR. DONNELLY: Oh, on occasion we have gone in and looked, yes.

ASSEMBLYMAN TOWNSEND: But these are the only two kids that you found?

MR. DONNELLY: I'll tell you, though, I doubt seriously, I could be wrong, but I doubt seriously if either one of these kids ever told any of the rest of them because they knew what the repercussion would be with their team members. Now, I'm sure that there were other kids on the team probably that knew about it, you know, maybe one or two of their buddies, but as a total situation with a team--those kind of kids will hang together. You seldom see one that you suspect running around with kids you do not suspect.

CHAIRMAN CAMPBELL: Are there any other questions? Is there anything else you'd like to add, Mr. Donnelly?

ASSEMBLYMAN KENT STACEY: I have a question, Mr. Chairman.

CHAIRMAN CAMPBELL: Mr. Stacey has a question for you.

MR. DONNELLY: Yes, sir.

ASSEMBLYMAN STACEY: Mr. Donnelly, since generally the outcome of some of these committee hearings is legislation in the field, do you feel that, for instance, the CIF is adequately handling this problem with the young people, or would we be smart in developing legislation that would develop some type of controls in this area and set certain standards?

MR. DONNELLY: Well, gentlemen, I think without proper legislation and the proper means by which school people, law enforcement people can enforce the legislation, your hands are tied. As to is the CIF properly handling this, I think in that respect it's got to be handled in the local locker room. Kenny Bacons (?) can sit in his office and tell us how it ought to be done, but unless it's being done in the individual locker rooms by individual coaches, by individual trainers, it's just so much paperwork. I think one of the steps that could be taken is to insure that there are trainers in every high school in the country, or in every high school in the state, period. The number of high schools that employ trainers is something like one and a half, two percent. It's very low. Yet, these people--the coaches are busy on the field; win and loss records mean something--can't spend their time checking kids all the time. This is one of the responsibilities of the trainer. And if we had a trainer in each high school, if it was mandatory--moneywise, we can hire a trainer; I teach, for example, four periods of adaptive PE; I make $600 additional per year for training. It figures out to be about seventeen cents an hour. But you don't get into the business for money. If you do, you're not going to stick around too long.

ASSEMBLYMAN DUFFY: How do I get a job that pays that much an hour?

ASSEMBLYMAN STACEY: Well, then actually there is what--insufficient staff, the coaches aren't particularly interested, would you say this?

MR. DONNELLY: Well, no, I don't say the coaches aren't interested. I would say this--they are inadequately prepared recognitionwise. There are just not enough hours in the day for them to carry on the duties, the functions of coaching. You have to realize that this is really an added burden. We have had a number of extra hour meetings--and I'm not talking about an hour here, an hour there--I'm talking about probably 25-30 hours among our own staff. There are 22 coaches, for example, and we have tried and tried to come up with solutions to the problems, situations that we've tried to iron out. Our local Anaheim Police Department has a group that they will--or, rather, they will bring a group of people in and put on a drug seminar--which is outstanding. The police officers are right there. They go through the whole thing--recognition, from what type of pills, the method by which the kids take them, what to look for, where they hide them, how they use them--extremely beneficial for us. We took the whole staff and went down. And we have a couple of kids, one of the kids that we talked about earlier, that we've spent hours trying to figure out what to do with this rascal. Again, the easiest thing to do is dump him. We kept him around just to try to see if we could straighten him out a little bit.

CHAIRMAN CAMPBELL: Are there any other questions? Thank you very much.

MR. DONNELLY: Thank you, gentlemen.

CHAIRMAN CAMPBELL: The next witness will be Mr. Paul Lowe and Mr. Robert Baxley. Mr. Lowe is one of the all-time great running backs in the American Football League. Mr. Baxley is an attorney for many athletes in San Diego, I understand--among others, Mr. Houston Ridge. And these two witnesses have been subpoenaed to appear before us. Which one of you would like to lead off?

MR. ROBERT BAXLEY: Mr. Chairman, I'd like to make a statement on behalf of Paul Lowe. I'm also his personal attorney. Mr. Lowe is prepared to candidly discuss his observation of drug use in professional football. I would request, however, that you not ask for any specific names of any individuals that might be involved.

CHAIRMAN CAMPBELL: All right. Fair enough.

ASSEMBLYMAN TOWNSEND: What's the purpose of that, may I ask?

MR. BAXLEY: We have reasons that we'd rather not disclose at this time.

MR. THOMPSON: There's a potential for litigation, I believe.

ASSEMBLYMAN TOWNSEND: Well, I don't know why the attorney can't tell me that. Okay, go ahead.

MR. BAXLEY: Well, there are members still playing ball....

ASSEMBLYMAN TOWNSEND: Well, why didn't you just say that you had a lawsuit pending and you didn't want to testify in that area? That's all you had to say.

MR. BAXLEY: I don't choose to argue with you, sir. You ask my explanation--I'll be happy to tell you.

ASSEMBLYMAN TWONSEND: I haven't got a straight answer out of you yet. I don't think I'm going to start now.

CHAIRMAN CAMPBELL: Why don't we start with Mr. Lowe, and we won't ask for names. Mr. Lowe, the allegation has been made that there is use of drugs that are not issued by the trainer or by the team physician in professional football. Have you ever observed this--and we're talking now about amphetamines and maybe even barbiturates in some cases, anabolic steroids, and things of this nature--what kind of use have you seen?

MR. PAUL LOWE: Well, I've seen the type just mentioned.

CHAIRMAN CAMPBELL: Do you see an awful lot of--do a lot of players use amphetamines, to your knowledge?

MR. LOWE: To my knowledge, quite a few. I've used them.

CHAIRMAN CAMPBELL: Do you find that they are helpful? Do you think, I mean, is there feeling that these kind of pills would help an individual or what?

MR. LOWE: Well, when I'm using them, I think so; I think I'm being helped.

CHAIRMAN CAMPBELL: Do you use them during a game?

MR. LOWE: I take a couple before the game, an hour and a half; and at the half-time I'll take another one.

CHAIRMAN CAMPBELL: Is your personal observation that most players take amphetamines?

MR. LOWE: I can't say most--quite a few--well, quite a few of them.

CHAIRMAN CAMPBELL: Would you say the majority in the areas in which you've participated have taken them?

MR. LOWE: The majority, yes.

CHAIRMAN CAMPBELL: The majority of the players have.

MR. LOWE: On the team I played for.

CHAIRMAN CAMPBELL: Are these the kind of pills that you would have prescribed to you by a doctor or do you get them--where do you get the amphetamines?

MR. LOWE: From the coach.

CHAIRMAN CAMPBELL: The coach gives them to you?

MR. LOWE: Well, he gave--he started us out on these--we call them the little pink pills. We had to take them.

CHAIRMAN CAMPBELL: The coach asked you to take them to help you, is that what you're saying?

MR. LOWE: We had to take them at lunch time when we have our lunch. He would put them on a little saucer and prescribed for us to take them and if not he would suggest that there might be a fine.

CHAIRMAN CAMPBELL: You mean a fine for not taking the amphetamines?

MR. LOWE: He said they would help us build strong bodies..

CHAIRMAN CAMPBELL: I see. So these are furnished by the coach, not by the trainer or by the physician?

MR. LOWE: The trainer would put them out, and the coach would tell us to take our pills.

CHAIRMAN CAMPBELL: Has the team physician ever talked to you about the use of these? Has he ever suggested that they might be harmful or anything of that nature? To your knowledge, has any team physician prescribed them, not the trainer or the coach now?

MR. LOWE: Well, once I think we heard one of the fellows mention that they weren't good for us. It was mentioned about some other doctor--he had taken ones that some other doctor--he said he wouldn't prescribe them for us--but we just ignored it. The coach said, well, he's not our doctor so go ahead and take them anyway.

CHAIRMAN CAMPBELL: Did you take these regularly when you played? When you say, maybe two or four during a game, did you take them....

MR. LOWE: Take them during spring practice, spring training, and the other ones.....

CHAIRMAN CAMPBELL: Did you take them during the week, I mean, in season, or just during on the days of the ball games?

MR. LOWE: Taken them every day in training camp for a certain period of time.

CHAIRMAN CAMPBELL: I see.

MR. LOWE: They were just put out, and........

CHAIRMAN CAMPBELL: Do you know of anybody who kept on even after they were cut out because they could get them elsewhere--I mean, that continued to take them regularly?

MR. LOWE: No, I don't know of any.

CHAIRMAN CAMPBELL: Do you know of anybody on any team on which you've played who ever really became totally dependent upon amphetamines--I mean, had to use them all the time to really get through the day or anything like that?

MR. LOWE: Not from anything I could see, but really I wasn't around them so I wouldn't know.

CHAIRMAN CAMPBELL: Do you know of anybody having a problem getting rid of not taking them--I mean, you know, once they got used to them, acquiring the habit of taking them and then found it difficult to put the habit down?

MR. LOWE: I can't answer that one it's illegal, I don't know.......

CHAIRMAN CAMPBELL: Okay, Mr. Duffy.

ASSEMBLYMAN DUFFY: Mr. Lowe, I want to make this real clear. You say that you were given these pills by your coach, is that correct?

MR. LOWE: He instructed us to take the pills at noontime.

ASSEMBLYMAN DUFFY: Right.

MR. LOWE: We had a vitamin pill and the little pink pill.

ASSEMBLYMAN DUFFY: All right now, are you sure--do you know what the little pink pill was, because it doesn't mean anything to me? Do you know that the pink pill was an amphetamine? You do, okay, I won't ask.....

MR. LOWE: I know it now, but I didn't know it.....

MR. DUFFY: Didn't know it at the time, right. And clarify this--you were, at least it was implied--you let me know if I'm giving any.....

MR. BAXLEY: May I?

ASSEMBLYMAN DUFFY: Surely. Okay? It was implied to you, although--at least it was implied that if you didn't take these pills, you would be fined or in some way censured by the club, is that correct?

MR. LOWE: Yes, we had to take them.

ASSEMBLYMAN DUFFY: You had to take them. That was part of the obligation as a professional player? Fine, thank you.

CHAIRMAN CAMPBELL: Mr. Townsend.

ASSEMBLYMAN TOWNSEND: Mr. Lowe, I'd like to ask you a question. I hope it's allowed. Have you ever been injured during the course of a game, Mr. Lowe, and given a pain killer or anything like that?

MR. LOWE: Yes.

ASSEMBLYMAN TOWNSEND: What kind of pain killer was it? Was it a pill or a shot?

MR. LOWE: Cortisone and novacaine.

ASSEMBLYMAN TWONSEND: Cortisone and novacaine. Thank you.

ASSEMBLYMAN DUFFY: May I follow on that?

CHAIRMAN CAMPBELL: Yes, Mr. Duffy.

ASSEMBLYMAN DUFFY: Have there been any instances that you know of in which the use of any of these pain killers have resulted in long-term injuries to you or another professional athlete? What I'm saying is, in the case of a pain killer and being sent back into the game, do you know of any instances in which this has resulted in any injuries to you or any other player?

MR. LOWE: No, not a.....

ASSEMBLYMAN DUFFY: You don't know of any?

MR. LOWE: Not a permanent injury, but.....

ASSEMBLYMAN DUFFY: Okay, fine, thank you.

CHAIRMAN CAMPBELL: Mr. Lowe, do you know if this is a practice that other teams also followed, the utilization of amphetamines and things of this nature?

MR. LOWE: I don't think I really understand the term of "amphetamines"--I'm thinking of something

CHAIRMAN CAMPBELL: Oh, a pep pill.

MR. LOWE: Would you phrase the question again?

CHAIRMAN CAMPBELL: Do you know of other--you understand the pep pills now are amphetamines?

MR. LOWE: The pep pills, that's what I'm speaking of, the pep pills.

CHAIRMAN CAMPBELL: You were talking about the pep pills you were given.

MR. LOWE: These weren't the pep.....

CHAIRMAN CAMPBELL: The pink pill was a pep pill.

MR. LOWE: The pink pill was not the pep pill I was speaking of at first.

CHAIRMAN CAMPBELL: Was that the anabolic steroid?

MR. LOWE: This was the.....

CHAIRMAN CAMPBELL: The one that builds you up.

MR. LOWE: Right. This is the one we had to take every day.

CHAIRMAN CAMPBELL: In training you took the anabolic steroids? But in game time you took the pep pills?

MR. LOWE: Pep pills, right.

CHAIRMAN CAMPBELL: I see. Do you know if this was the practice of other professional football teams to use--now, you also played for Buffalo for a while, didn't you?

MR. LOWE: No, Kansas City.

CHAIRMAN CAMPBELL: Kansas City. Did they do the same thing there?

MR. LOWE: There's quite a difference, too.

CHAIRMAN CAMPBELL: Yes, I stipulate to being a difference in--did they, did Kansas City also use the same kind of drug procedures? I mean, did they give you the anabolic steroids in training camp and did they give you the pep pills?

MR. LOWE: (inaudible) to attorney

CHAIRMAN CAMPBELL: Did the coach give you the pep pills at game time, or did you have to get those yourself?

MR. LOWE: Got them from the trainer.

CHAIRMAN CAMPBELL: You got them from the trainer.

MR. LOWE: And the doctor.

CHAIRMAN CAMPBELL: The doctor. Did you have--I mean, you just asked them for them and they gave them to you or did they just give them out to you?

MR. LOWE: I asked for them.

CHAIRMAN CAMPBELL: You asked for them and they gave them to you?

MR. LOWE: Right.

ASSEMBLYMAN TOWNSEND: He did say, "and the doctor", did he not, Mr. Campbell?

CHAIRMAN CAMPBELL: Yes. He said the trainer and the team doctor.

ASSEMBLYMAN TOWNSEND: Okay.

CHAIRMAN CAMPBELL: Is it your feeling, Mr. Lowe, that the use of pep pills gave you a significant advantage on the football field? Do you feel it helped you on the field? Could you have played well without amphetamines, without the pep pills?

MR. LOWE: Yes. I played before without using them. But I thought that was the thing to do--I used them. I thought I performed better with them.

CHAIRMAN CAMPBELL: You did think you performed better with them?

MR. LOWE: Yes.

CHAIRMAN CAMPBELL: But the reason you used them was because everybody else was using them?

MR. LOWE: I learned about it when I got into pro ball.

CHAIRMAN CAMPBELL: You didn't take them in high school or college? I see, just in pro ball. Okay. In your own mind, does this in any way--do you think this jeopardizes the concept of competitive sports to, you know, take a drug that's going to supposedly stimulate you to hopefully play better than you would normally play?

MR. LOWE: I can't answer--I used it, and I shouldn't have--I don't know what to say.

CHAIRMAN CAMPBELL: All right. Do you find--you're not in pro football any more, you're retired, is that correct?

MR. LOWE: Right.

CHAIRMAN CAMPBELL: Okay. Do you still ever have any need to use pep pills for your own--you were able to put them down without any trouble at all?

MR. LOWE: I use liquor (inaudible).... laughter.....

CHAIRMAN CAMPBELL: Do you personally feel there should be any kind of guidelines for the use of drugs by athletes? Do you or do you think they should just be given out to whomever wants them?

MR. LOWE: Well, I feel this way--I'm a law-abiding citizen--I mean, it's against the law, isn't it? So I would figure it should be the same way. It shouldn't be that easy to get for a professional athlete I would think, because it hurts you although you think it might be helping you.

CHAIRMAN CAMPBELL: All right. Are there any other questions of Mr. Lowe? Mr. Baxley, did you have anything you wished to state at this time?

MR. BAXLEY: Yes. I represent Houston Ridge, who was a former member of the San Diego Chargers who has filed a lawsuit in San Diego. I am prepared to tell you about that lawsuit. I will decline to answer any questions that might infringe upon the attorney-client privilege or jeopardize his rights in the lawsuit. Basically, Mr. Ridge has alleged--this is a matter of public record in his complaint--that he was injured on October 11, 1969, while performing as a professional football player in a game between the Miami Dolphins and the San Diego Chargers.

ASSEMBLYMAN TOWNSEND: Mr. Chairman, let's let these people solve their lawsuits in the courts, would you please? I don't want to hear it here.

CHAIRMAN CAMPBELL: All right. But I think the statement that he's making now is a matter of public record, and I think we should enter at least that aspect of it into.....

ASSEMBLYMAN TOWNSEND: Well, we can get it out of record. I don't see any need for disclosing it at this hearing.

CHAIRMAN CAMPBELL: Well, I think we'll ask Mr. Baxley to be just as brief as he possibly can.

MR. BAXLEY: The complaint is essentially for malpractice. One aspect of the complaint is for battery, for the administration of what are termed "dangerous drugs" under the Business and Professions Code, and the third cause of action is for conspiracy involving the American Football League and the National Football League for their participation in the use of the drug.

CHAIRMAN CAMPBELL: Okay. On the dangerous drugs category, you're talking essentially about amphetamines, is that correct?

MR. BAXLEY: All drugs that would come within that definition of the Business and Professions Code Section 4811 which were administrered to my client.

CHAIRMAN CAMPBELL: Are there any questions? Mr. Baxley, thank you very much. Mr. Lowe, thank you very much for appearing before the committee. Our next witness will be Mr. Jack Scott of the Institute for the Study of Sport in Society. And if you'll explain to us what this is, Mr. Soctt, we'd appreciate that.

MR. JACK SCOTT: Keeping with the nature of what my comments will be today, I think it would help if I just briefly state a little bit of my background so you'll understand where I'm coming from. I was a high school and college football player and track man. I attended Stanford University on a track scholarship, participated there, and at Syracuse University. Since then, I've been an AAU track coach. I'm the president and coach of an officially sanctioned AAU track club. I'm athletic director and teacher at a public high school in Berkeley. Last year I taught at the University of California at Berkeley where I taught the first course that examined the role of intercollegiate athletics in higher education. I have also been a writer. I've covered the Olympic Games as a sports writer. And primarily my involvement has been both personally as a participant and as a writer and as a researcher in the areas of football and track and field. And I'm now serving as Director of the Institute for the Study of Sport in Society. It's an organization that was formed approximately four months ago. The prime purpose of the organization is to facilitate the humanization of sports in American society. We're primarily interested in the role sports will play in our schools, high schools and colleges. Is that enough about the institute?

CHAIRMAN CAMPBELL: Right.

MR. SCOTT: What I'd like to speak to you today is about, I think, one of our mutual concerns, concerns that we've had at the institute as one of our top priorities when the institute was founded, what we felt was the crisis in drug usage in sports. And I think that now both popular literature and research indicate that there's a very real problem in this area. I'm not going to speak to that problem particularly. I think most of us here will accept that the problem exists. The first thing.....

ASSEMBLYMAN TOWNSEND: I'm sorry, Mr. Scott-excuse me, Mr. Chairman--did you say this is a top priority item with the institute?

MR. SCOTT: That's correct. As soon as the funds are available, the first in our research projects by theinstitute will be into the use of drugs in sports.

ASSEMBLYMAN TOWNSEND: So that in your opinion it's pretty prevalent?

MR. SCOTT: That's correct.

ASSEMBLYMAN TOWNSEND: Thank you.

MR. SCOTT: The first question, I think, that we at the institute have and that you people have is the question of the reliability of data in the whole area of drug usage. When I was teaching at Berkeley last year, the team physician for the University of California at a medical conference in San Francisco mentioned that if any members of the University of California team were involved in the use of amphetamines, that at most, it was one or two players, it was very isolated, and that it was not at all widespread. A student who was a football player at the University of California, a young man by the name of Mike Moeller, did a research paper for my course for which he interviewed practically every varsity football player at the University of California. The results of this were published in the San Francisco papers. It found that approximately, according to his data, 48 percent, half the team regularly used amphetamines. I spoke with him personally. His brother is a participant in football at the University of Southern California, and according to his brother's personal observation, the use at these schools, in other Pac 8 schools was even much more common than at the University of California. Now, I'm not particularly saying which of these two sources is the most reliable, but I certainly think perhaps somewhere in the middle ground, between the two--between the team physician that claims that there is no usage or very isolated and very rare and the young man who is a member of the team who did a very scholarly report that finds approximately 50 percent of the team. When it was published in the papers, there was no objection. The press attempted to talk to as many players as they could to see if this was erroneous information that he reported, and at that time, no players spoke out or were particularly upset. They seemed to feel that it was reliable data. Many of the players thanked him, in fact, for reporting it because they felt it was something that should be brought before the public. In the area of the steroids in the particular school that I was familiar with, the University of California, a football coach mentioned that they had never been involved in aiding athletes in getting steroids or in using steroids. Last year, the co-captain of the University of California football team, James Cawkins(?), at the conclusion of the season spoke out and revealed that while he was a student athlete at the University of California, on advice of both a football coach and the team physician, he was put on steroids for 30 days in the hope that it would make him bigger and stronger. And it did, but when he began to develop peculiar side effects, he went to the team physician. The team physician somewhat reluctantly acknowledged that this sometimes does happen, and he was taken off the steroids. Since then, the team physician has acknowledged that he no longer puts people on steroids. So that's one of the problems with reliability. Now, what sources you are going to use.....

CHAIRMAN CAMPBELL: Mr. Duffy has a question.

ASSEMBLYMAN DUFFY: Are team physicians the same for football as for track?

MR. SCOTT: Yes. They have one team physician.

ASSEMBLYMAN DUFFY: Thank you.

MR. SCOTT: And the whole question with regard to the rules and the concerns--I think that if coaches, in particular, based on my personal experience, were as concerned with the usage of drugs that seemed to be facilitating performance as they are about other kinds of drug usage that I think the problem would be certainly attenuated, if not eliminated. And I think that my personal observation is that there is a tremendous amount of hypocrisy in this area, of coaches and athletic administrators being concerned about one kind of drug usage but not others, drugs that facilitate performance. Okay. I think that it's a reality--anyone who has done a sociological rundown of the models that high school or college coaches use for their behavior, for their approach to sport, that it's well established that the model is professional football in most cases, a college coach or a high school coach usually does not perceive himself as an educator similar to, say, an English teacher or a biology teacher. Time and again, you know, the statements by football coaches, particularly, would acknowledge this. I'm sure that most of them would readily admit it, that a Vince Lombardi type individual would be the model that they would use. I think--now Paul Lowe or someone who will testify after me may have seen others who will speak to the widespread use in professional sports. Since that is the model that both colleges and high schools are using, it already exists at that level, and in the future it's only going to increase. Okay. There was some question--one of the early witnesses talked about, seeming to--at least to me--imply that somehow the individuals who were involved in drug usage are the athletes who need a crutch, those who really aren't at the top. My experience in Mexico City talking with Olympic Gold Medal winners from all countries , including the United States, was that the discussions around drugs did not involve whether or not they were taking drugs but what kind of drugs they were taking, which kind of anabolic steroid was best, which kind of amphetamine could not be now found by the test that they were using in Mexico City. And I certainly, now, could not speak for every single Gold Medal winner in track and field in Mexico City. In my discussions with numerous individuals, again, it was not an issue of whether or not they were taking them but which drugs were best. It was widely accepted now that it was simply impossible to get to the top, especially in weight events, events such as the decathlon, without the use of these drugs. I personally know one individual, I believe he certainly would not mind my mentioning his name--Captain Phil Shinnick --who was a member of the 1964 olympic team in the broad jump and an alternate in 1968, who has excellent potential in the decathlon but he feels in order to compete against those individuals who are the top in the decathlon he would have to use anabolic steroids. And given his attitude towards sports, he feels that would empathetical to his approach to sports--he has refused to do this. Okay, but what is the atmosphere that might be created for young men to involve themselves in using amphetamines. Something which they aren't really sure of the potential dangers and drugs like steroids. We have to talk about the milieu that a high school or college athlete finds himself in. I think when we have individuals that talk about football as analogous to war--I was very pleased to recently hear that the State Superintendent of Public Schools, Max Rafferty, expressed his alarming concern about the use of pep pills in high school football. At the same time, when Dr. Rafferty gives speeches as he did to the State Athletic Directors Association last year, he is talking about two great national institutions which simply cannot tolerate either internal dissention or external interference--our Armed Forces and our Interscholastic Sports Program. Both are by necessity benevolent dictatorships because by their very nature they cannot be otherwise. He goes on in this vein. So I think when high school players and college players get out there and are performing in this atmosphere, a game often to the athlete comes down to being the final contest between good and evil. Now, its entirely reasonable to me as a psychologist, that in this atmosphere a drug can help your performance, even if there are minor damages, certainly if it is war that's not something that is going to be given any consideration. —6

ASSEMBLYMAN CAMPBELL: Let me interject here. You're suggesting, then, that what occurred at the Olympics was the fact that people were by-and-large using drugs and the discussions down there were not the fact that they were using drugs, but what kind of drugs to use, what would be the best, and what would escape detection. Is that correct?

MR. SCOTT: That's correct.

ASSEMBLYMAN CAMPBELL: And you're suggesting that because the high school player tends to look up to the Olympic athlete or professional athlete where drug abuse is very common, that he tends to mimic these kinds of activities--using amphetamines, steroids, etc.

MR. SCOTT: That's correct. I would like to make it clear that I'm not taking necessarily an anti-drug or pro-drug stand. I think that it certainly would be too simple-minded that you are against or for drug usage in sports. I think there are some kinds of drugs, that if they perhaps had no damaging effects, an athlete would get the muscle pull shortly before the Olympic games, if he can take a drug, and they now do have drugs--enzymes--which will facilitate his recovery without injuring his condition so he could go on and before in a manner that he has been training for many years. If sports medicine can determine that there are no detrimental effects, I think it's entirely reasonable that an athlete should have the right to use these kinds of drugs. It certainly would be analogous to if someone had penicillin. There are some individuals that would be against any kind of drug usage and that is unreasonable. So, if it could be determined that some kinds of drugs such as this could aid an athlete who had sacrificed and worked for many years, it's entirely reasonable that that kind of drug could be used. However, if that is going to happen, I think it is imperative to those individuals who can afford them. One of the problems that exists right now in track and field that I'm very familiar with is individuals who have independent financial resources, individuals who attend wealthy colleges, have these drugs made available to them where other athletes who are attempting to compete against these individuals do not have them. I think, again, if sport medicine can determine that these drugs have no serious effects, it's not unreasonable to expect athletes to use them. It is only fair that these drugs be made available on some kind of basis so that individuals because of their social-economic status in our society are not discriminated against in their participation in sports.

ASSEMBLYMAN STACEY: There's a couple of questions at this point. Do you feel that some people are discriminated against in getting these drugs?

MR. SCOTT: Unquestionably. An individual who I happen to know. In 1967 he placed fifth in the National AAU Decathlon Championship, and has continued participating since then, but now he's competing against individuals in many cases, that are using steroids, are using other drugs, and he simply does not have the financial resources to buy these drugs. He is not attending a college; he is not competing for a wealthy track organization that can buy them for him. This certainly extends well beyond drugs--it extends into equipment and facilities, too.

ASSEMBLYMAN STACEY: You mentioned steroids. I happen to know for a fact that the majority of the steroids are available at a very, very inexpensive price. How do you mean that he is kept from getting these, or is it other drugs that we are talking about?

MR. SCOTT: Well, one--I think that you will acknowledge, I certainly would acknowledge--that to this young man, if steroids are available, he might take them. I might myself not too many years ago. I'm in coaching and I was curious to see the effects, and did attempt to get steroids. I went to three different physicians and drug stores and was unable to purchase them. I had whatever financial resources were necessary. The physicians I went to either refused to make them available or the drug stores refused to make them available. They're not that widely known.

ASSEMBLYMAN STACEY: I think maybe if we went back to 1959 we'd be talking about expensive steroids, but I don't think we're talking about very expensive steroids in this stage--not cortisone, or any of these-they're very inexpensive.

MR. SCOTT: My understanding is that most of these drugs are made available through physicians, on a prescription basis.

ASSEMBLYMAN STACEY: Well, okay.

MR. SCOTT: That becomes a problem for some individuals in our society who don't have the money to search out a physician who is willing to prescribe steroids, because there are many physicians who are unwilling to do it. To individuals of limited resources, that does become a problem.

ASSEMBLYMAN STACEY: Maybe we could have a "Medi-Sport" program like Medi-Cal.

MR. SCOTT: My final point, and I'd be happy to answer any questions,is that I think that as most sports historians might agree, the record book, the rule book or any sporting activity expands, it is oftentimes an indication of a deterioration of a kind of that sport. I think the NCA rule book is a good example of this. The rule book continues to expand because they have an uncontrollable situation. In an effort of this committee, one of the questions that was put to me, what can this committee best do in inhibiting control over the use of dangerous drugs in sport. I think it would be a mistake to take a purely legalistic approach. I think that drug usage is only a symptom of the dehumanization that exists in American Athletics. There is a problem that must be attacked as to the way the coach perceives himself. If the coach is out there to produce a winning team at all costs? Or, is he out there to be an educator, to hopefully develop qualities that will facilitate the development of responsible, democratic citizens. I think, although I'm sure there will have to be some kind of legal approach, it would be a mistake that would only be attacking the symptom. I hope something the institute is doing and perhaps the committee can do, is to look into the philosophy that dominates sports, the philosophy that has allowed this kind of development to occur, the kind of individuals who do control and who have allowed this to take place. I think we know, any of us--whether it be drug abuse in sports or in other areas of society--a legalistic approach is not enough. It can't control the situation. So I do hope that in our attempts, attempts are made in regard to athletics in schools to facilitate the coach in perceiving himself as an educator rather than as a professional coach. Something can be done to replace the model for high school and college coaches with that of a professional coach. We replace that with a model of educator and I think if that is done with the drug problem that, the anything goes philosophy, would be eliminated and we would not have to be concerned with legality.

ASSEMBLYMAN STACEY: You're saying then, that the usage of drugs is higher among athletes than it is among the general public whether it be at the high school level, college level, or professional level?

MR. SCOTT: You have to be more specific about what kind of drugs. I would certainly say with steroids when the young man at the University of California did the report found that twenty-eight percent of the football players at Cal were using steroids, I am quite confident that twenty-eight percent of the University of California students at Berkeley are not using steroids.

ASSEMBLYMAN CAMPBELL: What percentage are using amphetamines?

MR. SCOTT: Forty-eight percent (among athletes) and that was on a regular basis. I have no knowledge what the use of amphetamines would be of Berkeley students.

ASSEMBLYMAN CAMPBELL: Is forty-eight percent the same as the student population?

MR. SCOTT: I'm not sure. I don't think....

ASSEMBLYMAN CAMPBELL: You don't have to respond to that, Mr. Soctt. Mr. Stacey.....

ASSEMBLYMAN STACEY: Well, I get quite concerned when I hear this, really, and I mean this seriously, we show among our athletic programs less of some of these--if you'll pardon the expression--social problems among these people that are participants in them, and the social problems usually lead to drug abuse. I don't know, maybe you're recommending that the coach go out and have a losing year every year and be proud of that fact rather than have the spirit of competition and sportsmanship that develop winning years.

MR. SCOTT: I think that anyone who has been involved in sports, or most anyone who has been involved in sports, certainly understands the need for competition and the healthy role that athletics and competition can play in education, but there must be a distinction between the competition that exists in professional athletics when these individuals are hired to produce a winning team at almost any cost versus the role that athletics should play in our high schools and universities. I think if these high school and college coaches perceive themselves first as educators rather than as coaches, modeling themselves after professional coaches, the rampant and widespread use of drugs primarily referring to amphetamines and steroids would not exist.

ASSEMBLYMAN CAMPBELL: Mr. Scott, thank you very much. We appreciate your being here today. Next witness will be Dave Meggysey, Former linebacker for the St. Louis Cardinals.

MR. DAVE MEGGYSEY: That's right. What I would like to talk about, probably just to give you some background initially on myself, I played fourteen years of football in this country; seven years with the football Cardinals; four years at Syracuse University; and three years at Solon High School, a little suburb of Cleveland, Ohio.

At the end of last season in 1969, I retired from football and I've written a book describing my experiences, somehwat critically, of my participation in football, entitled, "Out of Their League." What I would like to talk to you about is what I consider the main problem that hasn't been touched on today in my listening to the various witnesses talk and that has to do with the pressure on the various athletes to use drugs. Now, Jack Scott touched a little bit on that problem and a person who has not played in sports, particularly big-time sport such as professional football, the sport that involves the greatest amount of pressure to the individual athlete, cannot realize what the factors are that will force the ballplayer to demand that he use amphetamines, demand that he use steroids, demand that he be shot up for a game and so forth. He will attempt in any way possible to get an edge on his opponent and make himself bigger, tougher, stronger, meaner so that he can do his job.

I think at the high school level, this was my first introduction into the use of drugs, when I was injured in a game and it was diagnosed as a wry neck. It was a muscle spasm in my neck and I went to the team physician, our high school team physician, the night of the game - we play our games at night - and was shot up with I assumed, something to be novocain or xylocain substance which kept the pain from bothering me and I was able to play. I remember very clearly at that time if there was some way that I had knowledge of being shot up, I was asking for it, but I didn't have the knowledge at the time, I didn't know, and it was the choach's decision and the team physician's decision to shoot me up. I had no idea what they were doing. He stuck a needle in my neck and shot something in there and the pain disappeared and I was able to go out and play.

Now, in my experiences at Syracuse, and you have to remember this was eight years ago, and it is my understanding that drug abuse in this country, in athletics particularly, has grown geometrically since that time. I was unfamiliar with the use of amphetamines, pep pills, bennies, dexies, whatever you want to call them, at Syracuse but there was some rumor that other guys used them. I was introduced to amphetamines in football, incidentally, when I came out to play in the Shrine game here on the Coast, and it was my senior year at Syracuse. There was a guy there from one of the Southeastern Conference schools who in talking with him, some other guy and myself, he was somewhat amazed and surprised that we had not been using amphetamines and he said in his particular school they had been using them by the gallons. He went on to say that he had spent three years down there perfecting and trying to find what he called the perfect benny and he said, incidentally, I have two extra ones and just prior to the bus leaving for Kezar Stadium we went up to his room, this other guy and myself, who had also been unfamiliar with bennies, we each popped a pill and went on to play the game.

Since I hadn't been using them, hadn't built up any toleration for them, it really hit me like a sledge hammer. I was frantic when I played. I was racing around and doing incredible things but the effect after the game was somewhat....

ASSEMBLYMAN CAMPBELL: How do you mean incredible things?

MR. MEGGYSEY: I remember playing in the game and having this feeling that everybody was moving approximately half my speed, you know, the tackle. I played a tremendous ball game but the feeling of highness was only met by an equal feeling of lowness after the game. I didn't sleep at all that night. I stayed awake and by the next morning I was in terrible shape. That night I went out and tried to find a sleeping pill to get myself calmed down. By the next morning I had a very acute feeling of depression, being completely burned out, being shot out.

Now, when I went with the Cardinals to training camp, I very rarely used amphetamines and the amphetamines that were used on the Cardinals were dexamils and we used them before scrimmages; the older guys would use them during training camp because some of the older guys felt that they needed them.

ASSEMBLYMAN CAMPBELL: Were these just noramlly used there?

MR. MEGGYSEY: Yes, it was fairly normally used. Well, the trainer of the Cardinals had what amounted to a drug store down in his training room there. The drug cabinets were open and could be used. I used to go down in the off-season and get dexedrine, 15 milligrams and 10 milligram capsules that I used to keep me awake when I was studying late at night from graduate school, when I was going to graduate school in Phoenix.

ASSEMBLYMAN CAMPBELL: Was the team physician aware of these pills?

MR. MEGGYSEY: The team physician was completely aware of them. He would have to be. He was there every Sunday and saw the cabinet full of drugs. Now we had complete access to them and they just passed them out, they didn't demand that we use them, but they were certainly available if we asked for them. One of the things that we used was B-12 shot. A lot of guys would get B-12. One of the ballplayers had a feedstore down in Texas and he had some experience with shooting cows and he would regularly give the shots to the players and they felt he was much better at it than our trainer.

They used extensively, cortisone, xylocain, and novocain, to shoot ballplayers up before the game, the guys who were injured.

ASSEMBLYMAN CAMPBELL: Cortisone and what else?

MR. MEGGYSEY: Cortisone, novocain, and xylocain. I never was shot except in high school, as I told you. In 1969 when I had torn up my ankle pretty badly in an exhibition game, it wasn't coming around and I was at the point of pleading with the trainer to shoot me up and his only reason for not shooting me up was that the injury was so disfused that he would have to hit me about ten times with the needle to effectively deaden the pain. There was some concern that with a weight-bearing joint deadened this much would result in serious injury if I did go out and play.

There's no doubt in my mind that certainly from personal experience, first-hand experience, of seeing guys shot up and taking pep pills myself, but very rarely, and also taking tranquilizers, taking those very rarely also, that certainly in professional football drug use is very widespread. The tremendous emphasis on winning; the tremendous pressure on the competitive value, physical violence in football, certainly justifies their use to most people who are in the administrative position and professional football team organizations.

I will have to say also, in adding to what Jack Scott said, that the use of amphetamines in colleges I would guess is fairly widespread, not only because professional teams serve as models but professional trainers regularly hold clinics and also serve as models for college trainers. In talking with various athletes who have come into the league after I was in the league, they told me that they had made extensive use of drugs.

ASSEMBLYMAN CAMPBELL: Let me ask you - a pep pill can only mask fatigue, it really can't eliminate it. The effect is as much psychological after you start, because you develop a tolerance to them, I'm sure, if you use them regularly.

MR. MEGGYSEY: Well, I don't know.

ASSEMBLYMAN CAMPBELL: Do you think you have a competitive advantage?

MR. MEGGYSEY: There's one trainer, as a matter of fact, the Detroit Lions, instead of handing out pep pills, he regularly hands out Placebos when guys request pep pills and his feeling is that it is as you say, psychological, that you have in this. I think it can probably be medically demonstrated, I don't know this, there is a biological effect from amphetamines, from speed, and I felt when I did use them it did give me somewhat of a mental advantage that made my thinking so much clearer. I was sharper; I was able to discern and define things much more sharply than I was when I wasn't using them. I think it is true that a lot of guys take them to mask fatigue when they aren't in as good as shape as they can be, particularly a lot of older ball players that use them regularly at practice because they are getting old and not able to stand the pace anymore.

ASSEMBLYMAN CAMPBELL: Any other requests?

MR. MEGGYSEY: I would like to talk a little bit more about one thing that I did overlook and this again gets back to the pressure I got off because of the descriptions of the use of drugs.

ASSEMBLYMAN STACEY: What was this about?

MR. MEGGYSEY: Excuse me, I didn't hear the question.

ASSEMBLYMAN CAMPBELL: Give him the description of the use of drugs.

MR. MEGGYSEY: Particularly on the college level, one has to understand the curious relationship between the player and the coach, and the tremendous pressure to exhibit courage, physical courage, when playing and also when injured. The late Vincent Lombardi once said, "there was no such thing as a football injury," and some reports of documented cases where guys have been badly beaten up but yet felt the need that they could not afford to back off and let their injury heal and come back to play, that they had to remain in competition and they would ostensibly do anything to do that.

ASSEMBLYMAN STACEY: At this point then, is it the player himself though who is really asking for the chance to be shot with something that will allow him to go back and play? Or using the drugs that will pep him up and go? Or is it the coach forcing?

DAVE MEGGYSEY: Well, Mr. Stacey , you made a comment before which I wrote down. You said, "the social problems lead to drug use in sports," and I think this is entirely true. I think when you take the game of football, for example, and even on the peewee level, the Pop Warner level, and the high school level at the lowest form, and you emphasize winning to the extent that it is, you emphasize the relationship between violent courage and winning when you take the fun out of it, if you will, when you de-emphasize the learning experience in the process and emphasize the product which is winning, then I think the ballplayer who gets locked into the psychology, if you will, someone is demanding of anything that he can use to keep his level of competition at the highest point and not only a level of competition but a level of violence that is demanded of him from the coaches. My only point is, this escalates as you go up the ladder. It escalates in college and certainly in the pros. One of the justifications for the pros use of drugs is that indeed it is a sport, rather it is entertainment, and these men are professionals and should be able to make the judgment whether to use drugs or not. Certainly on the college level and on the high school level and peewee level when ostensibly sport is supposed to be an education experience, it seems to me that the emphasis we put on sports in this society, which I see as a social problem, certainly eliminates the process and emphasizes in this particular day, the use of drugs.

ASSEMBLYMAN DUFFY: I didn't want to interrupt but I had to smile while you were talking about the emphasis upon winning the game. You have some people who play one game every two years and our game comes up two weeks from now so with the exception of winning and the importance whereof were a little akin.

MR. MEGGYSEY: To give you an example--and it's a personal experience--I mentioned this to other ballplayers interested and gotten a feeling of the same. As I told you, I tore up my ankle pretty badly at the last exhibition game in 1969, and was on crutches and had to go to the radiologist to get my ankle x-rayed, and I remember getting out of the car and hobbling up the stairs and thinking, I hope it's broken. Now that's a kind of weird attitude to have and why would I think that? For one, if it was broken I could at least take the x-ray picture into the coach and say, look, I'm not loafing, I'm not faking, I am courageous, but see, I have a broken bone and here's the picture.

ASSEMBLYMAN STACEY: Who asked you to play? I mean, isn't it your decision? When you signed a contract with the Cardinals didn't you make that decision?

MR. MEGGYSEY: I think that's true and I can't say that my level of thinking at that point was anything laudable in that sense, and could be countered with an argument that you just demonstrated. One thing I think you will have to understand and which I think I faithfully documented in the book, is the process in which an athlete gets locked i to psychological dependency with the coach and into a system of values which in many cases makes for pretty irrational thinking.

ASSEMBLYMAN STACEY: Maybe in a sense we make the irrational things because we're out again on that competition every two years.

MR. MEGGYSEY: Well, I think without a doubt, in my mind, that football in this country is a spectator sport, it's not for the participants, and I think that guys getting out to play really serve some very specific needs in this society and those needs are values of competition, values of violence, and values of military organization. People like yourselves whogo see football games and support football at all levels are certainly part and parcel to the problematic nature of football and then seeing the problem that you have now, we have a lot of young guys having to use drugs and certainly it is not on thelevel of a conscious decision but it's more or less a subconscious motivation of the need to do because they feel it would so enhance their ability to perform.

ASSEMBLYMAN STACEY: What I think I'm trying to say: that's part of all of us when you get right down to it, whether it be on this side of the table or you as a professional athlete or professional in any field is the desire and the demand, and.....

MR. MEGGYSEY: Then I should ask you, what is the concern of this committee? Why do you see drugs as a problem? Why don't you give your kids speed, why don't you give your kids dexedrine to stay up all night to study?

ASSEMBLYMAN STACEY: I happen to be a pharmacist and I happen to know that drugs are dangerous.

MR. MEGGYSEY: Then using your argument back on yourself, is to say then drugs are probably sport and anything should be used to get ahead and compete.

ASSEMBLYMAN STACEY: I didn't say that. I just said that's part of the competition not the drug use because most.....

MR. MEGGYSEY: But don't you see the relationship of the emphasis of the competition. The emphasis on exhibiting a certain amount of physical courage that will compel, in part, a player to demand, or to want to, or to ask for, a substance, a chemical substance, which will one; eliminate the pain so that he won't look bad in the eyes of the coach so he can compete. Will take speed so it will enhance his ability to play whether it's true or not. The question is, whether he believes it or not, and most guys do believe it. I believe it in part myself, and that, as I see it, is the crucial issue here.

ASSEMBLYMAN CAMPBELL: The pressure.

MR. MEGGYSEY: Well, I think it's kind of the value that we place on our sport and you can't take the issue of drug use in sports and legislate it out without being cognizant of the fact that there's certain values in society, and values in sports, which lead to a greater and greater use of drugs in sports. One can make the same case for a bunch of bank presidents that they are all on speed and you would have to at least ask the question why a particular population, makes such extensive use of drugs.

CHAIRMAN CAMPBELL: If everybody uses pep pills, don't they neutralize their impact?

MR. MEGGYSEY: It's probably true. So I don't know, maybe they could eliminate it that way. Very specifically, I don't think everybody uses them because people use them to get an advantage and it is questionable. The underlying approach of why we are concerned, it seems to me, why you all are concerned now is that the use of drugs somehow perverts the nature of sports, the nature of competition, that it gives the person not an unfair advantage but he is in some sense a synthetic person when he is demonstrating his competence in the sport.

ASSEMBLYMAN CAMPBELL: An unnatural advantage.

MR. MEGGYSEY: An unnatural advantage, however, you want to term it, and I am saying if that's your only underlying assumption, then you should ask the greater question as to, why, in the given population of athletes in this country, football players, trackmen, why there is such an extensive use of drugs, and why is there this compulsion for athletes to use drugs. Why is there a compulsion of coaches to, in some cases, demand players use drugs, and in other cases make it available for players to use them?

CHAIRMAN CAMPBELL: Do you find, or did you find, that almost every athlete is his own pharmacist and there are all sorts of superstitions going around about specific drugs and things of this nature?

MR. MEGGYSEY: The only superstition that I found, and this is somewhat documented by Sports Illustrated, was two pieces of drugs. It is the vitamin B-12 getting in, and pretty much everybody uses to get shot up the day before the game on B-12. No, it's just, at least with the football Cardinals, as I said, the trainer had a veritable drugstore down there from muscle relaxers, to vitamins, to various kinds of speed, amphetamines. To my knowledge I don't know of any use of steroids, but tranquilizers, novocain, xylocain, etc., these are made available.

CHAIRMAN CAMPBELL: Yours for the asking?

MR. MEGGYSEY: Of course. Nobody had to go out on the black market and try to buy their own stuff, it was completely made available.

CHAIRMAN CAMPBELL: So your thesis then is that you have to look at the pressure that causes the use of drugs.

MR. MEGGYSEY: Oh, for sure, I think it would be a gross mistake to look at this as a isolated problem and attempt to solve it by some form of legislative action which would.....

CHAIRMAN CAMPBELL: So you way we can't control it?

MR. MEGGYSEY: Which would impose tremendous penalties on the users and the dispensers of the chemical. As was pointed out in the Sports Illustrated series, is that it's a cops and robbers game and once you initiate tests and so forth to find out the existence of certain chemicals, that somebody is goingto come along and develop one that is not detectable and people are going to go t0 that. There's a reason for this, this is what I am saying, and I think that reason should be understood.

CHAIRMAN CAMPBELL: Are there any more questions? Thank you very much, I appreciate your being down here today.

MR. MEGGYSEY: All right. Thank you.

CHAIRMAN CAMPBELL: Now, we would like to hear very briefly from the man representing the CIF. What is the policy of the CIF? As it relates to.......

MR. TOM MORGAN: Mr. Chairman, if I mignt just be brief..

CHAIRMAN CAMPBELL: Do you want to come up here and identify yourself?

MR. MORGAN: Mr. Chairman, I am Tom Morgan, Administrative Assistant from the CIF, Southern Section Office, and I really don't want to take too much of your time because I can't add a lot to what Mr. Donnelly has told you. I can just say, that CIF is as vitally interested in this problem as you are, and I am here as an observer to just sort of.....

ASSEMBLYMAN STACEY: Do you have a policy as it relates to the use of drugs?

MR. MORGAN: No, sir, not a definite one at this time. Our two biggest problems are smog and drugs. Smog we took a stand on, but drugs, at this time, we do not have a definite policy, we leave that to the individual schools when they encounter the problem to ascertain the degree and impose the penalty.

CHAIRMAN CAMPBELL: I was going to ask what you fellows do in smog and.....

ASSEMBLYMAN STACEY: Well, no, I want to digress for a moment. Are the kids out stirring up the smog, or something? So you took a stand on that, you don't worry about drugs?

ASSEMBLYMAN DUFFY: You do have a policy on smog? Certain level?

MR. MORGAN: For the first time in our blue book, which is our book of bylaws for the Southern Section this year, we established a rule whereby if the ozone count reaches 0.35, the local prinicpal of the school involved has an alternative to cancel or postpone the competition.

ASSEMBLYMAN CAMPBELL: I understand our representatives from the Central Valley haven't faced this problem yet.

MR. MORGAN: Well, that's the reason we went/to Anaheim, if he's still around, to Bakersfield last year to play an exhibition game against Foothill, if I remember right?

CHAIRMAN CAMPBELL: So what you are saying, you don't have a policy as it relates to drugs.

MR. MORGAN: No, sir. We are interested in.....

CHAIRMAN CAMPBELL: Are you working on one?

MR. MORGAN: Yes, sir. This is part of our research right here to just try and determine what......

ASSEMBLYMAN CAMPBELL: All right. Thank you, very much. Is there a Mr. Haskell Brown? Is there anybody that wishes to testify before this committee? If not, the meeting stands adjourned.

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*ATTACHMENT I

EUGENE L. WYMAN
GREGSON BAUTZER
MARVIN FINELL
FRANK ROTHMAN
THOMAS H. KUCHEL
MARIANA R. PFAELZER
JEROLD S. SCHUTZBANK
MILTON RUBIN
CHARLES L. FONARROW
ALVIN M. CASSIDY
EDWIN W. DILLER
ALLAN B. GOLDMAN
RICHARD S. HARRIS
ALAN D. CROLL
JAMES R. ANDREWS
RICHARD E. SODELLS
ANDREW D. STEIN
DUDLEY F. MAHNKE
MYER J. SACKANY
KENNETH W. OLSON

STEPHEN D. GILBERT
RICHARD S. GOLDSTEIN
LOYD W. REED
LOWELL D. WEDEMEYER
WILLIAM L. ZELTONOGA
EUGENE H. WEBB
TERRY N. CHRISTENSEN
JEROLD S. SHERMAN
GERALD M. CHIZEVER
MICHAEL P. KING
DONALD M. FRIEDMAN
BARRY A. FRIEDMAN
J. STANLEY SANDERS
CRAIG D. CROCKWELL
PATRICK F. SHEEHY
BARRY E. FINK
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October 16, 1970

Sub-committee on Alcoholism and Drug Abuse
Assembly
California Legislature
c/o California Museum of Science and Industry
700 State Drive
Exposition Park
Los Angeles, California

Attention: Mr. William Campbell
Chairman

Gentlemen:

This office represents the National Football League, including the California member teams of said league, the Los Angeles Rams Football Company, the San Diego Chargers Football Club, the San Francisco Forty-Niners Football Team and the Oakland Raiders Professional Club. The league has been named as a defendant in an action presently pending in the San Diego Superior Court in which a former player for the San Diego Chargers Football Club alleges that an extremely serious football injury which he sustained was contributed to by his ingestion of drugs, and that such ingestion was permitted by the league and its members. The subject matter of the lawsuit overlaps to a great extent the area of inquiry of your sub-committee. The league and the San Diego Chargers Football Club vigorously deny the aforesaid allegations, but since the civil action is presently pending, we deem it inappropriate at this time for any representative of the four California member teams of the National Football League to discuss with your sub-committee matters which are relevant to, and will

October 16, 1970

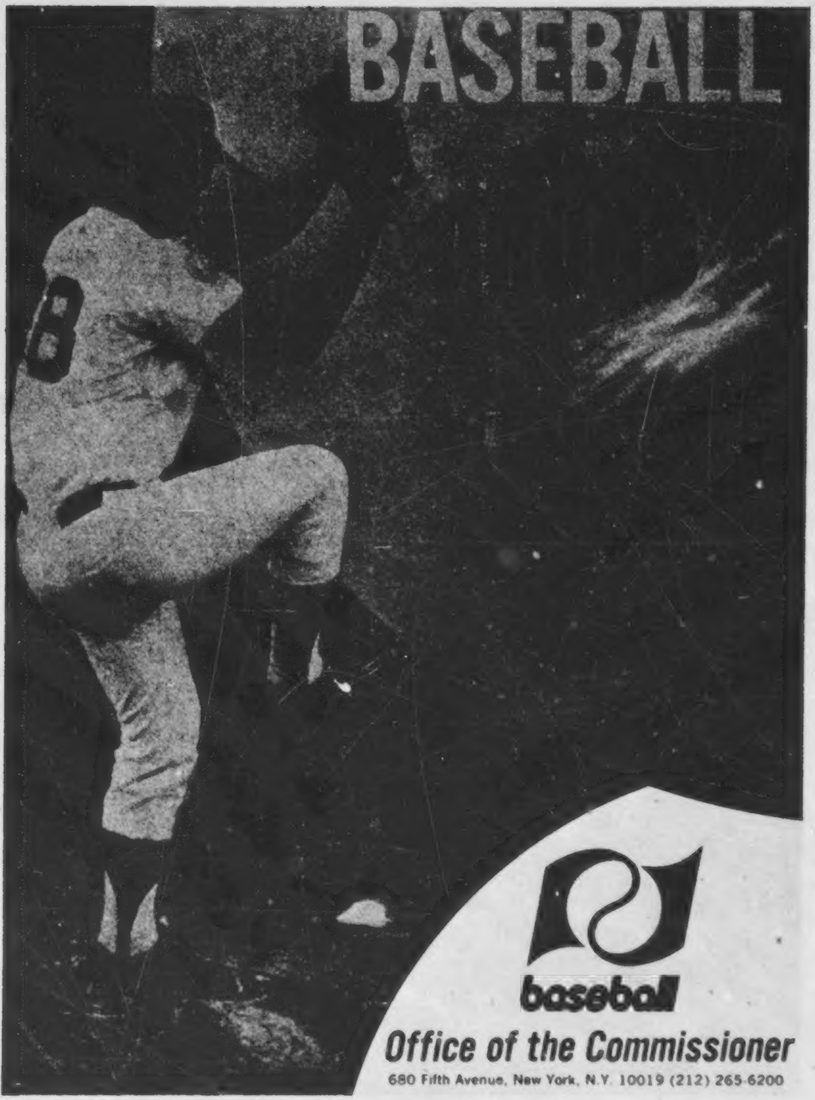
be thoroughly aired in, the discovery and trial stages of the aforementioned litigation. At such time as the pending litigation is concluded, representatives of each of the member teams will be pleased to testify before your sub-committee.

Please feel free to make this letter a part of the record in your hearings and contact us if you need any further information. Thank you for your cooperation.

Very truly yours,

CLF:mz
Charles L. Fonarow
of WYMAN, BAUTZER, FINELL, ROTHMAN & KUCHEL

APPENDIX 28



BASEBALL

baseball

Office of the Commissioner

680 Fifth Avenue, New York, N.Y. 10019 (212) 265-6200

BASEBALL'S DRUG EDUCATION AND PREVENTION PROGRAM

MESSAGE FROM BASEBALL COMMISSIONER BOWIE K. KUHN

I welcome this opportunity to present to each of you in Baseball information concerning Baseball's Drug Education and Prevention Program. The rising tide of drug abuse particularly among the youth of our country is of great concern to officials of government, industry, and to all of us in Baseball. Recognizing that drug abuse grants no immunity to any individual, family, industry or sport, a practical program has been initiated to first of all train Baseball people to be alert to prevent inroads being made by this infectious disease into our game and secondly to involve Baseball personnel more fully in community action programs throughout the country and thus aid in combating this growing menace of drug abuse.

In December 1970 the Association of Professional Baseball Physicians considered the use of drugs by athletes and issued a statement condemning the use of drugs to stimulate performance in an athletic contest. In March 1971 a series of three seminars were held at which the Drug Education and Prevention Program was outlined to Baseball's administrative and supervisory personnel, field managers, coaches, physicians, trainers, and player representatives. Speakers at these seminars were President of the Physicians Association Dr. Leonard Wallenstein, Director of The Johns Hopkins Hospital Drug Abuse Center Dr. Garrett O'Connor, Vice President of the Physicians Association Dr. Peter LaMotte, Baseball's Director of Security Henry Fitzgibbon, and myself.

Briefly the following are the elements of this program:

The team physicians have issued uniform guidelines to all trainers which are to be followed by each club. These guidelines will be reevaluated periodically for further refinement and improvement.

The program applies to both Major and Minor League Clubs and has the full support of the Major Leagues and National Association of Professional Baseball Leagues.

The general manager of each club has designated a director in charge of carrying out the program on a continuing basis for both Major and Minor League personnel.

All employees and players have been briefed concerning the aims and objectives of the program and to take steps to continue the program of education and prevention on a day-by-day, week-by-week, month-by-month, year-by-year basis.

Educational material has been made available to each club for distribution to its personnel and other material will be made available periodically to implement the program.

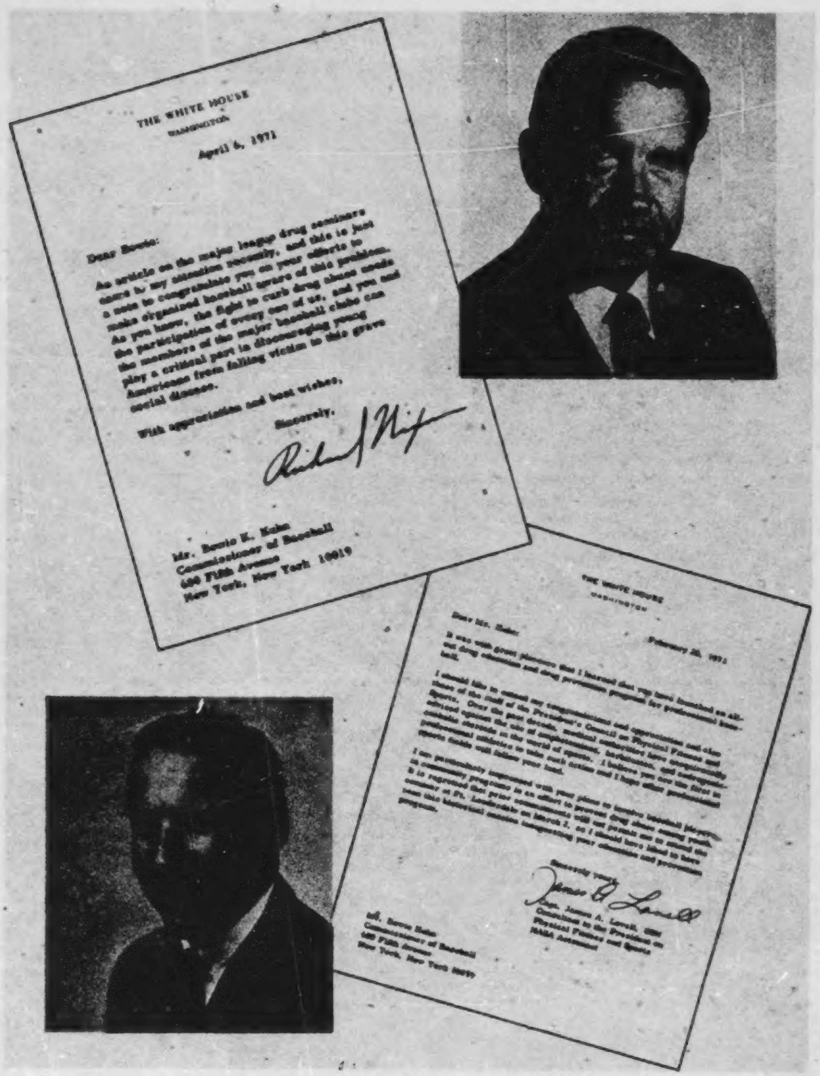
A highly important aspect of the program is the participation of each club in community action drug-abuse programs and all ballplayers are encouraged to take part in such programs, as a number of ballplayers have been doing for some time. The success these players have had prove that this phase of our program can make a substantial contribution toward the national effort in fighting drug abuse among our youth.

I am also requiring that the clubs report to my office all instances of illegal drug use or involvement. Baseball must insist that its personnel live within the federal and state drug laws. Discipline will be considered in cases of illegal involvement in drugs. It is not possible to set forth hard and fast rules regarding discipline. This subject will be considered on a case-by-case basis as we go along.

We have had no serious drug-abuse problems in Baseball and the objectives of our program are to keep Baseball free from any drug problem and thus protect the enviable record that we have, to protect the honesty and integrity of our game, and to protect the health and safety of our players.

Your cooperation and assistance in making this program effective is earnestly solicited.

Bowie K Kuhn



THE WHITE HOUSE
WASHINGTON

April 6, 1971

Dear Bowie:

An article on the major league drug seminars came to my attention recently, and this is just a note to congratulate you on your efforts to make organized baseball aware of this problem. As you know, the fight to curb drug abuse needs the participation of every one of us, and you and the members of the major baseball clubs can play a critical part in discouraging young Americans from falling victim to this grave social disease.

With appreciation and best wishes,

Sincerely,

Richard Nixon

Mr. Bowie K. Kuhn
Commissioner of Baseball
680 Fifth Avenue
New York, New York 10019

THE WHITE HOUSE
WASHINGTON

Dear Mr. Kuhn:

February 2[illegible], 1971

Sincerely yours,

James A. Lovell

Capt. James A. Lovell, USN
Consultant to the President on
Physical Fitness and Sports
NASA Astronaut

Mr. Bowie Kuhn
Commissioner of Baseball
680 Fifth Avenue
New York, New York 10019

TO:
PROFESSIONAL BASEBALL COMMUNITY

In an effort to provide the best possible medical care for Professional Baseball Players, the team doctors of the Major League Clubs met in December 1970 in Los Angeles at Baseball's Winter Meetings and formed the Association of Professional Baseball Physicians (APBP). It is also the purpose of the organization to act in an advisory capacity to the Commissioner and Baseball management on matters pertaining to the health of the players.

Among the topics discussed there during the two days of meetings were:

1. Responsibilities and limitations of the club trainers.
2. Use of drugs by Professional Baseball Players.
3. Preventive medical programs for all Baseball clubs.

The officers of this organization for 1971 are:

President	Leonard Wallenstein, M.D. Baltimore Orioles
Vice President	Peter LaMotte, M.D. New York Mets
Secretary-Treasurer	Joseph Finegold, M.D. Pittsburgh Pirates

The Association expressed its firm opposition to the use of narcotics or other types of non-narcotic drugs, such as barbiturates and amphetamines, as a means to enhance the performance of a ballplayer.

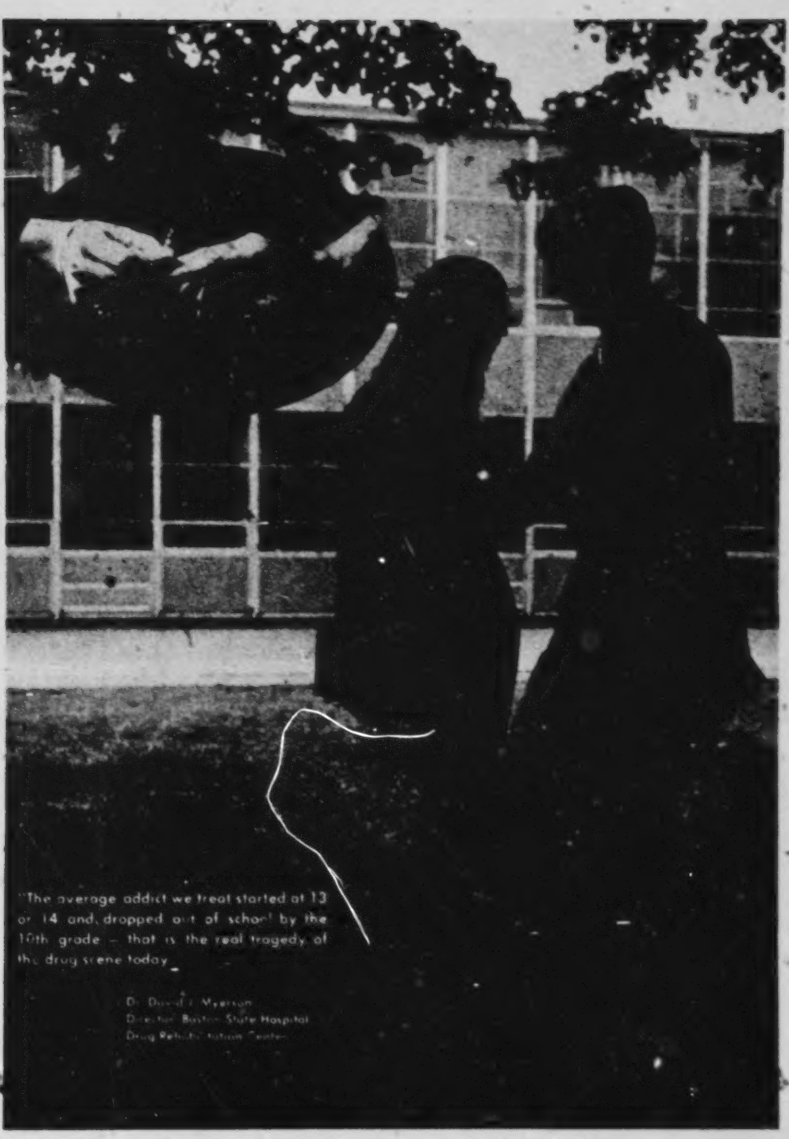
As a result of the discussions held and subsequent conferences with the Commissioner, "Guidelines for Trainers" were distributed to the trainers of the 24 Major League Clubs. It was also decided to initiate a drug-education program as a preventive measure. With this purpose in mind and the enthusiastic support of the Commissioner, we enlisted Garrett O'Connor, M.D., Director of The Johns Hopkins Hospital Drug Abuse Center, to conduct a series of seminars during March 1971 Spring Training season at the management level.

It is to be emphasized that the Baseball Drug Education and Prevention Program will be a continuing program and meetings will be held with the players during the regular season to enlighten all concerned. Through dissemination of information, interchange of ideas, and queries we hope to reach our goals.

Sincerely,

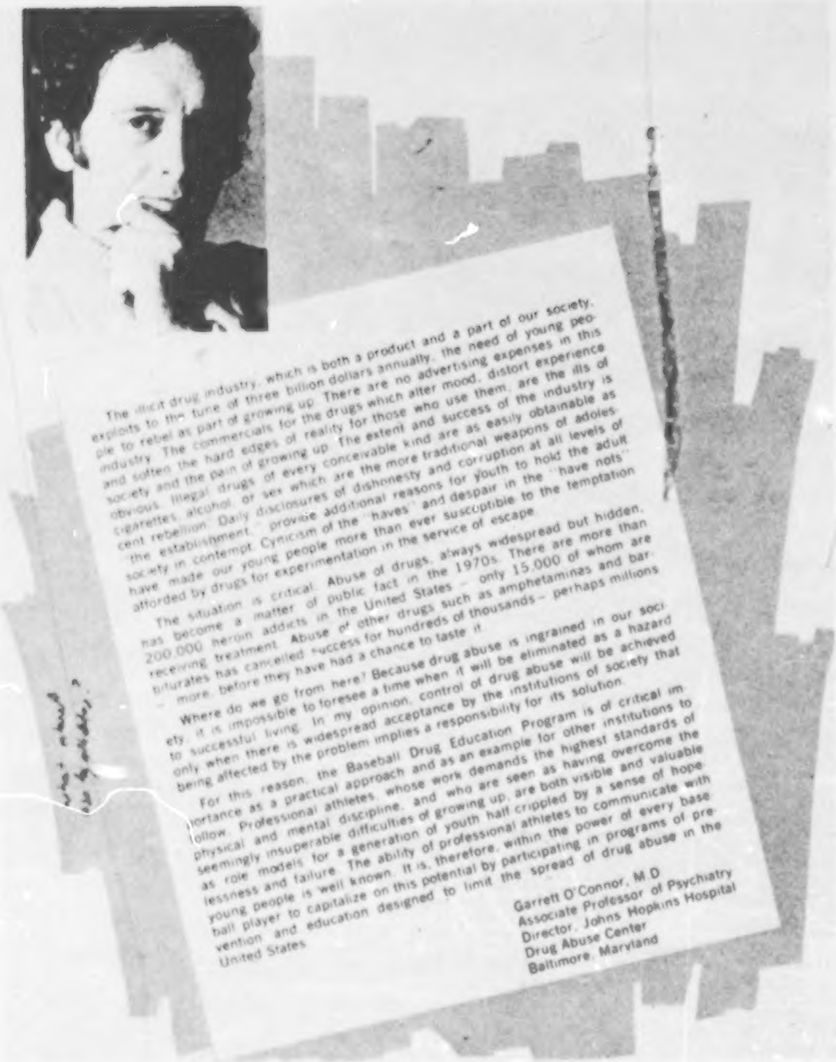
Leonard Wallenstein, M.D.

Dr. Leonard Wallenstein, President
ASSOCIATION OF PROFESSIONAL
BASEBALL PHYSICIANS



"The average addict we treat started at 13 or 14 and dropped out of school by the 10th grade – that is the real tragedy of the drug scene today."

Dr. David J. Myerson
Director, Boston State Hospital
Drug Rehabilitation Center



The illicit drug industry, which is both a product and a part of our society, exploits to the tune of three billion dollars annually, the need of young people to rebel as part of growing up. There are no advertising expenses in this industry. The commercials for the drugs which alter mood, distort experience and soften the hard edges of reality for those who use them, are the ills of society and the pain of growing up. The extent and success of the industry is obvious. Illegal drugs of every conceivable kind are as easily obtainable as cigarettes, alcohol, or sex which are the more traditional weapons of adolescent rebellion. Daily disclosures of dishonesty and corruption at all levels of "the establishment," provide additional reasons for youth to hold the adult society in contempt. Cynicism of the "haves" and despair in the "have nots" have made our young people more than ever susceptible to the temptation afforded by drugs for experimentation in the service of escape.

The situation is critical. Abuse of drugs, always widespread but hidden, has become a matter of public fact in the 1970s. There are more than 200,000 heroin addicts in the United States – only 15,000 of whom are receiving treatment. Abuse of other drugs such as amphetaminas and barbiturates has cancelled success for hundreds of thousands – perhaps millions – more, before they have had a chance to taste it.

Where do we go from here? Because drug abuse is ingrained in our society, it is impossible to foresee a time when it will be eliminated as a hazard to successful living. In my opinion, control of drug abuse will be achieved only when there is widespread acceptance by the institutions of society that being affected by the problem implies a responsibility for its solution.

For this reason, the Baseball Drug Education Program is of critical importance as a practical approach and as an example for other institutions to follow. Professional athletes, whose work demands the highest standards of physical and mental discipline, and who are seen as having overcome the seemingly insuperable difficulties of growing up, are both visible and valuable as role models for a generation of youth half crippled by a sense of hopelessness and failure. The ability of professional athletes to communicate with young people is well known. It is, therefore, within the power of every baseball player to capitalize on this potential by participating in programs of prevention and education designed to limit the spread of drug abuse in the United States.

Garrett O'Connor, M.D.
Associate Professor of Psychiatry
Director, Johns Hopkins Hospital
Drug Abuse Center
Baltimore, Maryland

Drugs of Abuse

The Problem

There is widespread abuse and illegal trafficking in narcotic, depressant, stimulant, and hallucinogenic drugs. Lives are being shackled in chemical chains because the users do not recognize the potential dangers of these drugs. The users can become physically or emotionally dependent upon these drugs, but the use of some of these drugs does not have the same social stigma that is associated with use of the narcotic drugs.

The Abusers

The chronic abuse of drugs is generally considered a symptom of mental or emotional illness. Drug abusers may come from any occupational, educational, religious and socioeconomic group. Regardless of how or why people start taking drugs, they soon come to depend on them as a chemical crutch to solve the everyday problems of life.

Drug abusers seldom find it possible to live successful lives. The drugs become their master and they lose interest in school, job, and family. They generally drift away from normal social contacts and seek the company of other drug users.

The Federal Law

The Federal statute controlling these drugs is the newly enacted "Comprehensive Drug Abuse Prevention and Control Act of 1970" (Signed by the President on October 27, 1970).

For the purposes of control the U.S. Government classifies the controlled substances in the following schedules:

I. the substance has a high potential for abuse; has no accepted medical use; lack of safety even under medical supervision, (e.g., opiates such as morphine and heroin, hallucinogens such as LSD, marihuana and peyote.)

II. the substance has a high potential for abuse; has accepted medical use; may lead to severe psychological and physical dependence. (e.g., methadone and cocaine.)

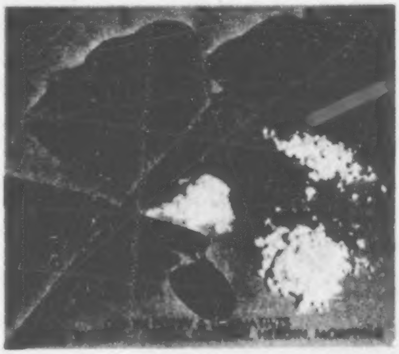
III. the substance has potential for abuse; has accepted medical use; and may lead to moderate or low physical or psychological dependence. (e.g., some stimulants or depressants containing non-narcotic active medicinal qualities, such as in some cough preparations with low codeine qualities.)

IV. the substance has low potential for abuse; has accepted medical use; may lead to limited dependence. (e.g., some mild depressants such as meprobamate and phenobarbital.)

V. the substance has low potential for abuse; has accepted medical use; may lead to limited dependence relative to the drugs in schedule IV. (e.g., stimulants or depressants containing non-narcotic active medicinal qualities, such as in some cough preparations with low codeine qualities.)

The Penalties

Possession of controlled substances is punishable by a term not to exceed one year, (a misdemeanor) except where the possession is for the purpose of distribution to others. In the case of a first offense of simple possession, the court may place the offender on probation, and if at the end of the period of probation the offender has not violated the conditions of probation, the proceedings against him may be dismissed without a court adjudication of guilt. A second offense for possession is treated as a two year felony.



If the offender is below the age of 21 when the offense occurs, he may obtain a court order expunging from all official records all recordation relating to his arrest, indictment trial, and finding of guilt. The procedure described above for first offenders may only be utilized once by an individual.

Manufacture or distribution of illicit drugs is punishable by up to 15 years in prison in the case of schedule I or II narcotic drugs, and by up to 5 years in the case of non-narcotic schedule I or II drugs or any other controlled drugs in schedule III. Illegal sales or manufacture of schedule IV drugs (generally minor tranquilizers) would carry a 3-year sentence. A first offense of schedule V drugs would carry a 1-year sentence. The transfer of marihuana, not for remuneration, would also carry a 1-year sentence.

Where a person over 18 sells drugs to a person below 21, the first offense punishment is twice that otherwise prescribed.

State laws vary greatly, some being more stringent and others more liberal than the new Federal law. Many states will be revising their statutes to parallel the Federal law. The penalty provisions of this new Federal law become effective on May 1, 1971.

Narcotics

Identification of Narcotics

Morphine has generally been diverted from legitimate stocks in white powder, tablet or liquid form, and infrequently in cubes. Brick morphine base seldom reaches this country. Heroin comes in fine powder ranging from off-white to dark brown, and occasionally purple. It is packaged and sold in capsules or wax paper and foil "decks" depending on the quantity. The loose drug or pre-packaged heroin is often carried in balloons or other plastic containers to facilitate concealment. Codeine has been diverted and appears in white powder, hypodermic tablet or solution form.

Man has used drugs since the beginning of time. He also abused these powerful drugs to escape from life and betrayed their medicinal value. Today, drug abuse remains a problem to society. To solve the problem, man must educate himself to the potent nature of the drugs of abuse.

The opium poppy — a beguilingly beautiful flower — grows in sections of Mexico, the Near and Far East. Cultivators process poppy juices into crude opium to prepare smoking opium or, most often, morphine base, identified with "999" or other trademarks. Clandestine laboratory operators then process the base drug to make morphine, codeine, or heroin for the United States market.

Abusers usually inject narcotics. Hence, the addict's equipment, the "works," is a strong indication of narcotic abuse. Because they use and share contaminated needles, addicts often contract hepatitis, tetanus, tissue infections and abscesses of the skin and various organs.

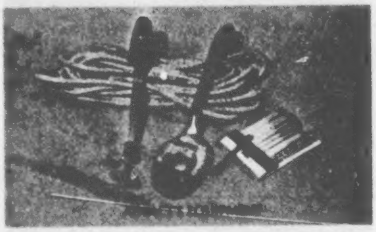
Heroin is the most popular narcotic drug of abuse, because of its intense euphoria and long lasting effect. It is synthesized from morphine and nearly 10 times as potent, but has no legitimate use in the U.S. Traffickers "cut" or dilute pure heroin so it normally ranges between 3% and 10% pure when sold to the addict.

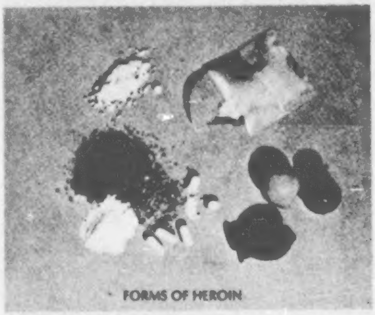
Doctors prescribe morphine to relieve pain, but addicts rank it second to heroin. They may abuse morphine when heroin is scarce.

Codeine is most frequently abused when in cough syrups, but occasionally the pure drug is abused. Its effects are milder when compared to heroin and morphine.

Identification of Cocaine: a crystalline structure. Resembling epsom salts or snowflakes (nickname "snow") it reflects light.

The coca bush grows in the Andes Mountains of South America. Farmers process its leaves into coca paste, then cocaine. Federal law classifies it as a narcotic, but pharmacologically it stimulates the central nervous system. People in some parts of the world chew coca leaves, but abusers in the





FORMS OF HEROIN

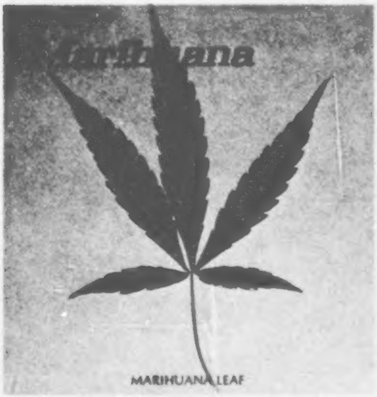
COCA LEAVES & ILLICIT FORMS OF COCAINE

U.S. generally inhale ("snort") or inject it into the body after mixing the crystalline powder with heroin.

Hydromophone, a semi-synthetic drug and opium derivative, is made from an opium extract or through a chemical process or a combination of both procedures. Meperidine was the first synthetic narcotic created. Methadone, another synthetic narcotic, is currently used in research as clinical treatment for heroin addiction. These drugs and all 81 semi-synthetic and true synthetic drugs have properties similar to opium derivatives. Each is considered a dangerous narcotic.

Exempt narcotics contain small amounts of narcotic drugs in combination with other drugs. They include codeine cough syrups and preparations of camphorated tincture of opium such as paregoric. When used as directed, they are reasonably safe and free of addiction potential. But young people frequently abuse exempt narcotics and addicts may substitute them when more potent drugs are not available.

DOSAGE FORMS OF METHADONE



MARIHUANA LEAF

MANICURED MARIHUANA, CIGARETTES AND [illegible]

Identification of Marihuana

Marihuana leaves have an odd number (5, 7, 9, etc.) of serrated leaflets. A preparation of marihuana resins, Hashish, is a light green-brown or black oblong, flat cake from 1/4 to 3/4 inches thick. These cakes, sometimes called "loaves" or "soles", are broken into small irregular "cubes" or "chunks" and sold by the gram. Manicured marihuana is a finely ground green substance that looks much like coarsely ground oregano or, when less finely processed, thyme. It is generally packaged in match boxes, plastic bottles, tins and other small containers for retail sale. In brick form, large pieces of marihuana twigs, stalks, leaves and seeds have been compressed into blocks, called "kilobricks" measuring about 5 x 2½ x 12 inches. Sometimes a finely processed veneer covers the coarse brick core. Cigarettes, generally shorter and smaller in diameter than the commercial type, contain manicured marihuana. Both ends are "crimped" or "twisted." Occasionally tobacco in regular filter-tip cigarettes has been removed and marihuana inserted, but unless the end is "crimped" the fine marihuana will fall out.

Abusers usually smoke marihuana in cigarettes, hookahs or pipes with small bowls. Some smokers make removable tin foil bowls to hold the marihuana. They also use wire "roach holders" or paper clips to smoke the whole cigarette.

Marihuana use in other countries and current scientific information indicate it is a dangerous drug. At the same time researchers in this country are carefully exploring the drug's short and long term effects.

Marihuana was discovered 5,000 years ago. The plant, Cannabis sativa L., grows in mild climates throughout the world especially Mexico, Africa, India and the Middle East. The strength of the drug differs from place to place, depending on where and how it is grown, how it is prepared and how it is stored.

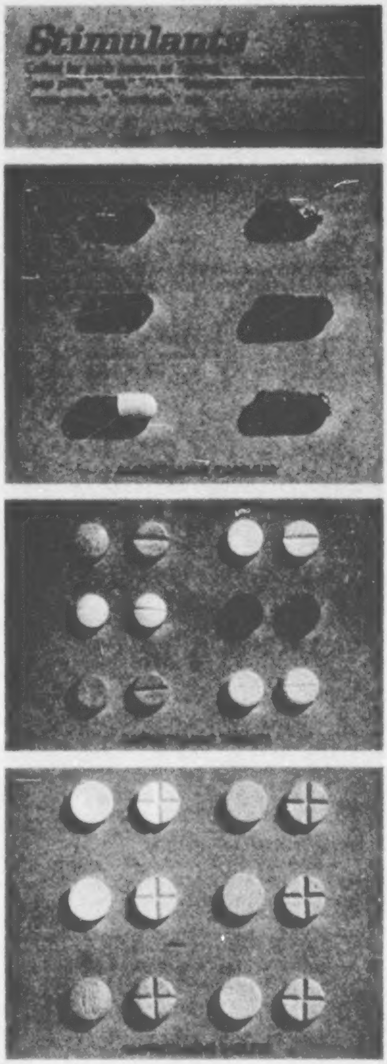
Traffickers frequently include all parts of the plant including seeds and stalks — sometimes grass, alfalfa, other drugs or diluents — in marihuana preparations. Sophisticated abusers insist on and pay high premiums for the more potent preparations of cannabis resin or the female flowering top of the plant. In 1966, a scientist synthesized the active ingredient of marihuana, tetrahydrocannabinol.

Identification of Controlled Drugs

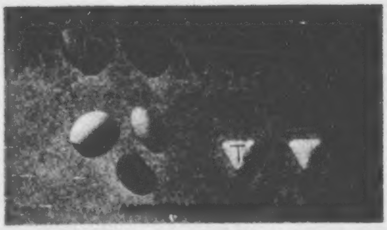
In general, the abuse of depressants and stimulants involves drugs that have been diverted from legitimate channels of distribution. The more popular brand name depressant or stimulant drugs bear trademarks or other identifying symbols. Presumptive visual identification is often possible because of the distinctive colors, shapes, or marking of the trade name drugs. However, many controlled drugs have no specific identifying characteristics and may be similar in appearance to many noncontrolled drugs. Laboratory analysis is therefore necessary for the positive identification of controlled drugs.

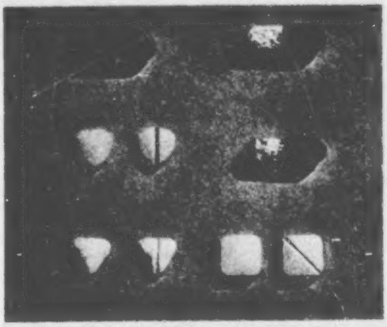
Stimulants — Why Taken

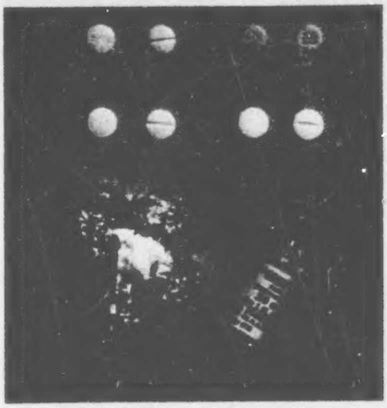
The stimulants act directly on the central nervous system. They produce a feeling of excitation which manifests itself in appetite loss increased activity with a feeling of energy and the ability to go without sleep for prolonged periods. During these periods the victim's body uses up its reserve of energy which may eventually cause the mind to "black out." Highway accidents may be the result



of drivers using these drugs. The stimulants are often relied on by criminals to increase their nerve. They may be the cause of reckless behavior in juveniles. The body develops a tolerance to these drugs and abusers increase their dosage, exaggerating the normal effects.







Look For

The abuser may exhibit restlessness or nervousness, with tremor of hands, dilated pupils, dryness of mouth, and heavy perspiration. He may be talkative and have delusions and hallucinations if he has used a large quantity. In the serious cases, amphetamines cause a psychosis which may resemble paranoid schizophrenia. In short, the person abusing stimulants may exhibit dangerous, aggressive behavior with antisocial effects. The stimulants are usually taken orally; however, the mainlining of these drugs is also encountered.

Depressants

Referred to as "downs," "Barbs," "Redbirds," "yellow jackets," "goofballs," "blue heavens," etc.

Depressants — Why Taken

The barbiturates and tranquilizers depress the central nervous system to relieve tension or produce sleep. They are abused for the alcohol-like euphoria they give. Barbiturates and alcohol taken together can, and have caused accidental death. Tranquilizers are sometimes used to "come down" from hallucinogens or stimulants. Depressants are both physically and psychologically addicting. Withdrawal from addiction to barbiturates can be more dangerous than withdrawal from the opiates.

Look For

The abuser of depressants will exhibit the common symptoms of drunkenness but there is no odor of alcohol unless both have been taken. A small amount of the drug makes him believe he is relaxed, sociable and good-humored. The drug makes him less alert and slower to react. Increased doses cause sluggishness, depression and for some users a quarrelsome disposition. The tongue thickens and speech becomes slurred and indistinct. There is a loss of physical coordination which may be accompanied by mental and emotional instability. The user may slump into a deep sleep or a coma depending on how much of the drug has been taken. Overdosage is common because the abuser may forget how much of the drug he has already consumed. Barbiturates are frequently the cause of intentional and accidental suicides.

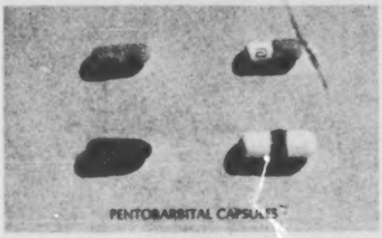
The habit forming drugs most generally used are opium, morphine, heroin and cocaine. In addition, marijuana, which is used generally in making cigarettes and also, the barbiturates, which are taken usually for the relief of pain, emotional tensions, and insomnia, are possibly habit forming.

Morphine:

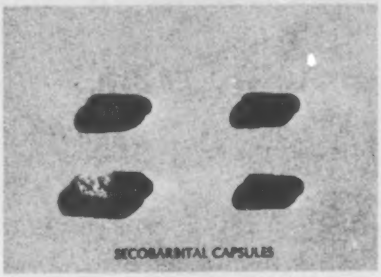
Morphine, a derivative of opium, is light brown in color and is dispensed in powder, pill, capsule, cube or small package form. That which comes in capsule form is known as a "cap" and that which comes in package form is known as a "deck." When sold illegally, the price of a "deck" is about $5.00 to $10.00 and that of a "cap," which contains about 1½ grains, is $3.00 to $5.00, depending upon the quality.

Heroin:

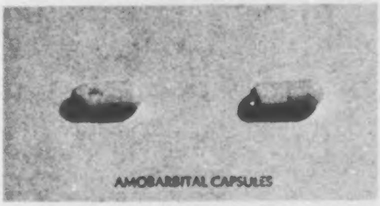
Heroin is a derivative of opium, is white in color and resembles powdered sugar. It is illegally sold to addicts in the same kind of containers as



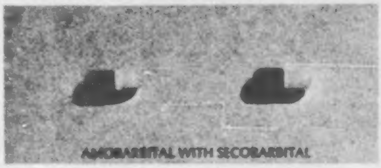
PENTOBARBITAL CAPSULES



SECOBARBITAL CAPSULES



AMOBARBITAL CAPSULES



AMOBARBITAL WITH SECOBARBITAL

morphine, and costs from $3.00 to $5.00 per capsule; decks are sold from $3.00 to $10.00 per package. The method of taking heroin is the same as morphine. It has the same kind but a more severe effect on the human system as morphine. It is an outlawed drug and is not allowed to be legally manufactured, sold or possessed in the United States. As with morphine, prices may vary in different areas.

Cocaine:

Cocaine is produced from the Cocos Erxthroxylan leaf. It is white, a flaky-like substance which resembles camphor, epsom salts or snow. It is usually purchased by addicts in the same type of containers as morphine or heroin. The price is much higher due to the shortage of cocaine at the present time. It is taken usually by sniffing up into the nostrils. Cocaine has a different effect on the human system than opium or its derivatives. It produces imaginary powers, jovial feeling, light heartedness, laughter and a superiority complex.

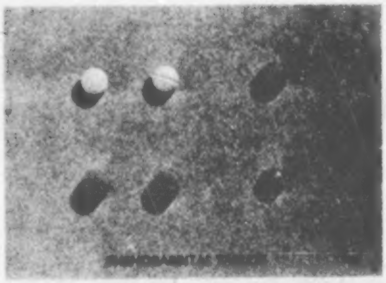
Barbiturates – Alias "Goof Balls":

The four most common types of barbiturates are: Seconal — Alias, "Red Birds"; Tuinal — Alias, "Bullets or Blue Heaven"; Nembutal — Alias, "Yellow Jackets"; and Amytal — Alias, "Blue Heaven."

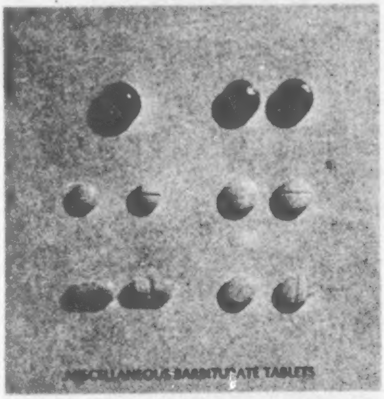
The misuses of barbiturates has become one of the biggest problems among our youth today. These barbiturates are very valuable for legitimate medical purposes, but can be very harmful if used improperly.

The symptoms of a barbiturate user are similar to those of a person under the influence of alcohol. Whenever a person acts as if he is under the influence of alcohol, yet no odor can be detected, we should immediately become suspicious of the use of barbiturates. Sometimes a person combines alcohol and barbiturates.

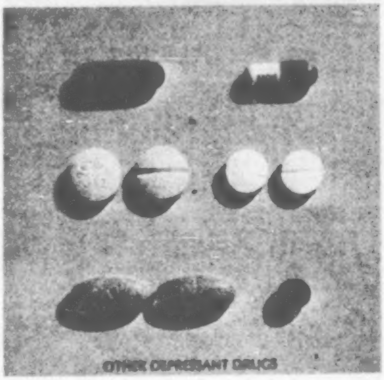
The symptoms to look for include: Confusion, difficulty in thinking, impairment of judgment, marked swings in mood with alteration between elation and depression, increased irritability and decreased ego control (fighting, weeping, etc.). Marked regression in behavior is usually the rule, such as neglect of person and living quarters. His tongue becomes sluggish and he often falls into a deep sleep or even coma. If that happens, he may die if medical help is not obtained immediately. Barbiturates are more dangerous than alcohol at this point because the person will not vomit and his stomach must be pumped or all that has been taken will be absorbed into his system. Even when there is no sign of life, a doctor should be called at once, because some cases have been revived.



PHENOBARBITAL TABLETS [illegible]



MISCELLANEOUS BARBITURATE TABLETS

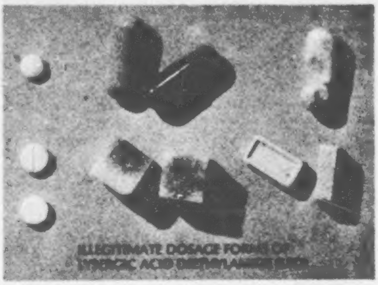


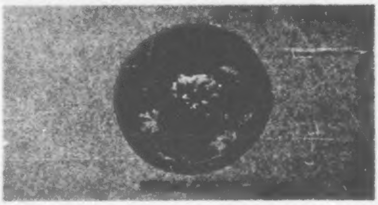
OTHER DEPRESSANT DRUGS

LEGITIMATE DOSAGE FORMS OF
LYSERGIC ACID DIETHYLAMIDE (LSD)

Hallucinogens — Why Taken

The hallucinogenic drugs have been irresponsibly promoted as a means of expanding consciousness. Some promoters who openly urge such have adopted the slogan "Turn On—Tune In—and Drop Out." The abuse of hallucinogenic drugs has also been part of a more subtle promotional theme involving "rock and roll" music, psychedelic books, magazines, and newspapers. Unfortunately, use of these drugs is considered the "in" thing to do by many. Youth are especially susceptible to the current glamorization of drug-taking by noncomformist groups. Since adolescence is a state of experimentation and "finding one's way" in life, youngsters may find the urge to "try" drugs attractive.


ILLEGITIMATE DOSAGE FORMS OF
LYSERGIC ACID DIETHYLAMIDE (LSD)



Look For

When the user takes hallucinogenic drugs, he experiences distortion and intensification of sensory perception with lessened ability to discriminate between fact and fantasy. These users often speak of seeing sounds, tasting colors, etc. There is a dilation of the pupils and dark glasses are often worn, even at night. The user may be restless with an inability to sleep until the drug wears off. He may, however, exhibit no noticeable physical signs of drug intoxication. The mental effects are quite unpredictable, but may include illusions, panic, psychotic or antisocial behavior, and sometimes impulses toward violence and self-destruction.

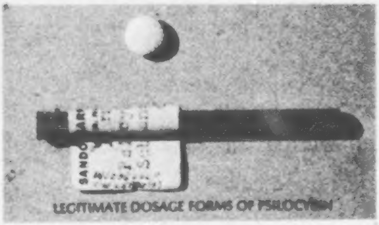
The hallucinogenic drugs in illicit channels of distribution originate from clandestine laboratories. They have no standard dosage forms or markings that make visual identification possible. The hallucinogenic drugs may be encountered as home-made capsules or tablets. They may also be encountered as nondescript powders or liquids. The physical properties of the hallucinogenic drugs are such that they can be easily disguised as various powders or liquids commonly encountered on the person or in the household. These drugs are frequently applied to common objects carried on the person. LSD for example, has been encountered on sugar cubes, chewing gum, hard candy, candy mints, crackers, wafers, blotter paper, postage stamps, handkerchiefs, aspirins, vitamins, antacid tablets, beads, and other personal jewelry.

PEYOTE BUTTONS AND GROUND PEYOTE BUTTONS

This nation is clearly kicks-oriented. Some of the substances used such as banana scrapings, provide — if anything — a mild psychedelic experience. Others, such as gasoline or glue, codeine cough syrups and marijuana, have limited though clearly present dangers. Still others, such as LSD, heroin, cocaine and amphetamines are capable of causing serious or permanent psychic or physical damage.

If we are to minimize the prevalence of drug abuse, we must involve our children early in constructive activity and in the problems of our society, for those who are so committed tend not to use drugs. For those who are susceptible, the prevention of drug abuse will depend on a judicious mixture of education, reduced supply and laws.

PSILOCYBE MUSHROOMS



LEGITIMATE DOSAGE FORMS OF PSILOCYBIN

Reprint from Bureau of Narcotics and Dangerous Drugs
U.S. Department of Justice

A Guide to Some Drugs which are Subject to Abuse*

ILLICIT (PROHIBITED) DRUGS

(Manufacture and distribution prohibited except for approved research purposes.)

	Slang names	What they are	How taken
HALLUCINOGENS	LSD, Acid	LSD-25 is a lysergic acid derivative. Mescaline is a chemical taken from peyote cactus. Psilocybin is synthesized from Mexican mushrooms.	In tablet, capsule, ampul (hypodermic) form or in saturated sugar cubes.
HEROIN	Snow, Stuff, H, Junk and others	Heroin is diacetylmorphine, an alkaloid derived from morphine; it does not occur in opium. A white, off-white, or brown crystalline powder, it has long been the drug of choice among opiate addicts. Its possession is illegal.	May be taken by any route, usually by intravenous injection.
MARIJUANA (Cannabis)	Joints, Sticks, Reefers, Weed, Grass, Pot, Muggles, Mooters, Indian hay, Locoweed, Mu, Giggle-smoke, Griffo, Mohasky, Mary Jane	Marijuana is the dried flowering or fruiting top of the plant Cannabis Sativa L., commonly called Indian Hemp. Usually looks like fine, green tobacco. Its possession is illegal. Hashish is a preparation of cannabis, taken orally in many forms.	Marijuana smoked in pipes or cigarettes. Hashish is infrequently made into candy, sniffed in powder form, mixed with honey for drinking or with butter to spread on bread.

LEGITIMATE (PERMISSIVE) DRUGS

(Essential to the practice of medicine; legitimate manufacture and distribution are confined to ethical drug channels.)

AMPHETAMINE	Bennies, Co-pilots, Footballs, Hearts, Pep pills	Amphetamines are stimulants, prescribed by physicians chiefly to reduce appetite and to relieve minor cases of mental depression. Often used to promote wakefulness and/or increase energy.	Orally as a tablet or capsule. Abusers may resort to intravenous injection.
BARBITURATES	Red birds, Yellow jackets, Blue heavens, Goof balls	Barbiturates are sedatives, prescribed to induce sleep or, in smaller doses, to provide a calming effect. All are legally restricted to prescription use only. Dependence producing, both psychic and physical, with variable tolerance. Signs of physical dependence appear with doses well above therapeutic level.	Orally as a tablet or capsule. Sometimes intravenously by drug abusers.
COCAINE	The Leaf, Snow, Speedballs (when mixed with heroin)	Extracted from the leaves of the coca bush. It is a white, odorless, fluffy powder that looks like crystalline snow.	A surface active anesthetic; by abusers, taken orally or, most commonly, intravenously alone, combined with or alternating with heroin. The coca leaves are chewed with lime, producing the effects of the contained cocaine.
CODEINE	Schoolboy	A component of opium and a derivative of morphine, in most respects a tenth or less as effective as morphine, dose-wise.	Usually taken orally, in tablets, for pain; or in a liquid preparation, of variable alcohol content, for cough. Can be injected.
METHAMPHETAMINE	Speed, Crystal	Stimulant, closely related to amphetamine and ephedrine.	Orally, as tablets or in an elixir, or intravenously.
MORPHINE	M, Dreamer, and many others	The principal active component of opium. Morphine sulphate: white crystalline powder, light porous cubes or small white tablets.	May be taken by any route; its abusive use is mostly by intravenous injection.

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Primary effect	How to spot abuser	Dangers
All produce hallucinations, exhilaration, or depression, and can lead to serious mental changes, psychotic manifestations, suicidal or homicidal tendencies.	Abusers may undergo complete personality changes, "see" smells, "hear" colors. They may try to fly or brush imaginary insects from their bodies, etc. Behavior is irrational. Marked depersonalization.	Very small quantities of LSD may cause hallucinations lasting for days or repetitive psychotoxic episodes, which may recur months after injection. Permanence of mental derangement is still a moot question. Damage to chromosomes, and hence potentially to offspring, has been demonstrated.
Like morphine in all respects, faster and shorter acting.	Morphine like.	Like morphine; dependence usually develops more rapidly. Dependence liability is high.
A feeling of great perceptiveness and pleasure can accompany even small doses. Erratic behavior, loss of memory, distortion of time and spatial perceptions, and hilarity without apparent cause occur. Marked unpredictability of effect.	Abusers may feel exhilarated or relaxed, stare off into space; be hilarious without apparent cause; have exaggerated sense of ability.	Because of the vivid visions and exhilaration which result from use of marijuana, abusers may lose all restraint and act in a manner dangerous to themselves and/or others. Accident prone because of time and space sense disturbance. Dependence (psychic but not physical) leads to anti-social behavior and could be forerunner of use of other drugs.
Normal doses produce wakefulness, increased alertness and a feeling of increased initiative. Intravenous doses produce cocaine-like psychotoxic effects.	An almost abnormal cheerfulness and unusual increase in activity, jumpiness and irritability; hallucinations and paranoid tendencies after intravenous use.	Amphetamines can cause high blood pressure, abnormal heart rhythms and even heart attacks. Teen-agers often take them to increase their "nerve." As a result, they may behave dangerously. Excess or prolonged usage can cause hallucinations, loss of weight, wakefulness, jumpiness and dangerous aggressiveness. Tolerance to large doses is acquired by abusers; psychic dependence develops but physical dependence does not, and there is no characteristic withdrawal syndrome.
Small amounts make the user relaxed, sociable, good-humored. Heavy doses make him sluggish, gloomy, sometimes quarrelsome. His speech is thick and he staggers. Sedation and incoordination progressive with dose, and at least additive with alcohol and/or other sedatives and tranquilizers.	The appearance of drunkenness with no odor of alcohol characterizes heavy dose. Sedation with variable ataxia.	Sedation, coma and death from respiratory failure. Inattentiveness may cause unintentional repetitious administration to a toxic level. Many deaths each year from intentional and unintentional overdose. Potentiation with alcohol particularly hazardous. The drug is addictive, causing physical as well as psychic dependency, and withdrawal phenomena are characteristically different from withdrawal of opiates.
Oral use is said to relieve hunger and fatigue, and produce some degree of exhilaration. Intravenous use produces marked psychotoxic effects, hallucinations with paranoid tendencies. Repetitive doses lead to maniacal excitation, muscular twitching, convulsive movements.	Dilated pupils, hyperactive, exhilarated paranoic.	Convulsions and death may occur from overdose. Paranoic activity. Very strong psychic but no physical dependence and no tolerance.
Analgesic and cough suppressant with very little sedation or exhilarant (euphoric) action. Dependence can be produced or partially supported, but large doses are required and risk is minor.	Unless taken intravenously, very little evidence of general effect. Large doses are morphine-like.	Occasionally taken (liquid preparations) for kicks, but large amount required. Contribution of the alcohol content to the effect may be significant. Degree and risk of abuse very minor. Occasionally resorted to by opiate-dependent persons to tide them over with inadequate result.
Effects resemble amphetamine but are more marked and toxicity greater.	Extreme restlessness and irritability; violence and paranoid reaction possible.	Excessive psychotoxic effects, sometimes with fatal outcome.
Generally sedative and analgesic (rarely excitatory). The initial reaction is unpleasant to most people, but calming supersedes and, depending on dose, may progress to coma and death from respiratory failure.	Constricted pupils. Calm, inattentive, "on the nod," with slow pulse and respiration.	Man is very sensitive to the respiratory depressant effect until tolerance develops. Psychic and physical dependence and tolerance develop readily, with a characteristic withdrawal syndrome.

DRUG ABUSE AND WHERE IT'S AT

Facts That Baseball Players Should Know

Dangerous, mind-altering drugs are abused in every corner of society — including yours. The term "drug culture" evokes images of Hippies and communes and pictures of places like the Haight Ashbury in San Francisco and Greenwich Village in New York. But how many of us realize in thinking about the "drug culture" that we are part of it too? For most people in the straight world, drug abuse means acid, or hash, or grass, or greenies, or goofballs. But how about aspirin, and tranquilizers, and booze, and cigarettes. A drug-a-day keeps the doctor — and everything else — away. We think.

And if you wake up in the morning with a hangover, or just feeling rotten and unable to face the day. What will it be? Coffee? Aspirin? A bromo? A hair-of-the-dog-that-bit-you? — or maybe a greenie? What's the difference — all of them have the same effect. They pick you up and make you feel better. For a few hours.

But what then? What about tomorrow and the next day, and the day after that?

It is probably safe to say that everybody reading this booklet is or has been a drug user of some kind. For the majority, alcohol, cigarettes, antibiotics, antihistamines, tranquilizers, and painkillers are part of everyday living. Strangely enough, adults who refuse to take drugs in any form are regarded as peculiar, and teen-agers who don't smoke marijuana run the risk of being called freaks by their friends who do. And who wants to be left out?

The power of mind-altering drugs, like that of atomic weapons, can be used for constructive and destructive purposes. A few examples. Barbiturates are effective for sleeplessness in doses of one or two capsules taken before bedtime. They are also effective for suicide in doses of one hundred taken all at once. Small amounts of amphetamines can keep a person awake for hours on end. But there is a price on each extra hour of wakefulness. Mood may be elevated, but performance is reduced. Strength may be increased, but coordination is diminished. The mind may feel alert, but reality is distorted. And when the effect wears off depression sets in.

Rapid technological advances in the field of medicine have led to the development of enormous numbers of new drugs. Even doctors are confused by the variety of drugs available for every conceivable purpose. To avoid such confusion they often limit themselves to the prescription of only a few drugs with which they are very familiar.

This is not the case with the general public. Reports of cures by "miracle drugs" are quite common. The announcement of a new drug on television creates a sort of Klondike rush to the doctor's office. Furthermore, many people medicate themselves with patent preparations readily available across the counter in every drug store. The bathroom cabinet of many homes resembles a well stocked pharmacy.

Abuse of mind-altering drugs is a form of self-medication. Unfortunately, these drugs, unlike cold tablets and skin creams, are invariably harmful and dangerous.

Did you ever wonder why drug abuse seems to be on the increase despite the fact that society has declared war on the problem? Widespread moral degeneracy coupled with Communist infiltration are popular but hopelessly inadequate explanations. A more practical but less well accepted view is that the illicit drug industry operates with relative freedom in our society and that it is in large part maintained and supported by the general public.

What is the evidence for this view? Research carried out in Baltimore during 1970, indicates that the illicit narcotics industry derives its revenues (and profits) from the sale of merchandise stolen by addicts to non-addicted citizens.

Here are the facts. It is estimated that Baltimore City contains 12,000 heroin addicts. Each one spends an average of $13,000 a year for his drugs ($35.00 a day). Most of this amount is obtained by stealing merchandise from stores, warehouses, cars and private homes, and later selling it as "hot goods" on the street, or to pawn shops and second-hand stores. The usual re-sale price is about one-third of retail value. Therefore, each addict must steal about $40,000 worth of goods annually to realize his required income of $13,000. In Baltimore, $314 million dollars worth of merchandise is stolen by addicts every year. This is sold on the streets to ordinary citizens for $84 million dollars — *every penny of which is a direct contribution to the narcotics industry.* Therefore it can be concluded that the illicit narcotics industry in Baltimore City is maintained and supported by the general public to the tune of $84 million dollars in annual contributions.

Problem: The population of Baltimore City is 1 million. 12,000 heroin addicts live there. Each one steals $40,000 of merchandise a year and sells it for $13,000 which is the amount required to support his heroin habit. Using these figures — take a pencil and calculate the cost for a) your town, and b) the United States. Remember, your answer pertains only to heroin abuse and does not include "soft drugs" such as marijuana, barbiturates, amphetamines, etc.

Surprised?

The phenomenal growth and stability of the illicit narcotics industry can be in part attributed to the fact that many classes of people derive material profits from its presence.

The executives and workers in the industry make profits unprecedented in industrial history. The addicts "benefit" because drugs are readily available. The non-addicted population benefits because valuable and desirable merchandise is available at vastly reduced prices. Those who have property stolen from their homes can benefit by lodging inflated claims against the insurance companies who, in turn, raise the cost of premiums to cover their losses. The government benefits indirectly because the poor people are provided with merchandise which otherwise might have to be supplied by the authorities. Small appliance manufacturers rejoice in the knowledge that for each article stolen a replacement is purchased at retail price. Burglar alarm manufacturers and security agencies have never had it so good. Department stores, who budget for "shrinkage" due to shoplifting, manage to sidestep disaster by passing on their losses to the customer. Second-hand stores and pawnbrokers would undoubtedly feel the pinch if their supplies of stolen goods were suddenly reduced. Medical institutions everywhere are frantically applying for monies made available by the Federal Government for drug abuse programs.

And then there are the addicts. Sixty-seven of them died from overdoses in Baltimore during 1970.

Beyond that, many of them are emotionally crippled at the age of 25. Skilled only in the art of deception and the practice of crime, they slide into a sub-culture of unspeakable degradation where the principal values are those which determine the availability of the next fix. Often, their capacity to relate maturely to another human being is crushed before it has had a chance to develop. Episodes of incarceration entrench their anti-social tendencies. Alienated and bitter, they wage relentless guerilla warfare on the society which has produced them.

But Society is well-versed in the art of making profit out of pain. Accordingly, the addict-victim has been put to work as a middle-man in an enterprise which principally benefits the non-addicted population. The maintenance of the economic equilibrium is therefore in the "best" interests of all concerned.

Public acceptance of the economic underpinnings of drug abuse is essential if the situation is to be brought under control. Empty moralizing and the use of scare tactics can only make matters worse.

DRUG ABUSE FACTS:

Did you know:

- that the illicit *narcotics* industry grosses over $3 billion dollars alone in the United States?
- that there are more than 200,000 heroin addicts in America?
- that children as young as 9 can and do become addicted to heroin?
- that *addiction* means physical dependence on a drug?
- that addicts feel compelled to continue use of the drug because it temporarily solves their problems and keeps withdrawal symptoms away?
- that only 45% of heroin addicts "graduate" from marijuana to heroin? For the remainder, "hard" narcotics, such as heroin, is the first drug used.
- that the profit margins from the illegal sale of narcotics are in the neighborhood of 1,000%?
- that *all* drugs are dangerous when taken in excess?
- that most mind-altering drugs are at least twice as powerful, and therefore twice as dangerous, when used in combination with alcohol?
- that deaths have occurred from even small doses of drugs?
- that at least three racing cyclists have died in recent years from over-exertion under the influence of amphetamines?
- that more than 12 billion amphetamine tablets were produced in the United States during 1970?
- that most doctors agree there is no essential medical use for amphetamines?
- that brain, heart, and liver damage can occur from excessive use of amphetamines and "speed" (methamphetamine)?
- that an individual under the influence of "speed" may become homicidal and suicidal?

- that LSD (acid) can produce permanent psychosis?
- that individuals under the influence of LSD have leaped to their deaths believing that, like Superman, they could fly?
- that drug dealers often spike LSD and marijuana with rat poison (strychnine) to give it extra strength?
- that the profit margins from the illegal sale of dangerous drugs like amphetamines and barbiturates range up to 1,000%?
- that barbiturates and other potentially lethal drugs come in brightly colored capsules which children easily mistake for candy?
- that more than 3,000 small children died last year from accidental overdoses of drugs found lying around at home?
- that 381 tons of barbiturates were legally manufactured in this country during 1969?
- that a person can become addicted to or dependent upon drugs without knowing it?
- that a person can be hooked on demerol or heroin after only a few days of use?
- that *tolerance* to a drug means that a person requires larger and larger doses to produce the same effect?
- that all mind-altering drugs reduce sexual performance?
- that many eliminate sexual desire?
- that some, such as amphetamines and marijuana increase sexual desire, but reduce performance leading to extreme frustration?

What should you do if you believe a friend or relative is abusing drugs?

1. Gently confront him with your concern.
2. Expect him to be angry and to deny that any problem exists.
3. Don't allow yourself to be turned off. Keep talking to him.
4. If your belief was correct, assist the person in finding help; e.g., family doctor, drug abuse clinic, etc.
5. Bring him there if necessary.
6. Don't abandon him if he refuses treatment or if he starts and fails.
7. Keep in touch with him while he is receiving treatment.

What should you do if you think you are abusing drugs?

1. Accept the fact that *not* giving up the drug will mean misery for yourself and your family, and probably failure in your work, not to mention prosecution by law enforcement agents.
2. If you are hooked, accept the fact that giving up the habit will require discipline, hard work, and courage.
3. Talk to the person closest to you.
4. See a physician.

What should you do if you believe a fellow player is abusing drugs?

1. Talk to him about your concern. Remember you are doing him a favor by confronting him.
2. Expect him to be angry and frightened, but keep talking to him.
3. Try to persuade him to see the team physician.
4. If he refuses, and you *know* he has a problem, then tell the team physician yourself privately. Also, let your friend know that you are sufficiently concerned about him to communicate the matter to the team physician whether he wishes it or not.

How can you be of help in the fight against drug abuse?

Professional baseball players are symbols of success and excellence. You can use that public image to good advantage by engaging yourself with young people, wherever you live or work. Everywhere, there are youngsters who will listen to you even after they have refused to hear others who speak to them. Everywhere, there are youngsters just waiting for somebody they respect and admire to tell them what is right and what is wrong.

By equipping yourself with the hard facts about drug abuse and by learning how to use them effectively in public, you can tip the balance for many young people so that they abandon drug abuse as a way of life and instead channel their energies and talents into constructive and healthy directions.

Community Action Program

Baseball vs. Drug Abuse

One of the primary objectives of Baseball's Drug Education and Prevention Program is to involve Baseball more fully in community action programs to combat the growing menace of drug abuse and narcotics use in our country, particularly as it applies to the young people.

The Commissioner's Office Notice No. 12 dated April 5, 1971, which outlines the Drug Education and Prevention Program requested that each baseball club seek ways in its city and community to increase its participation in community action drug abuse programs. In every major city, there are programs designed to combat drug abuse. Each baseball club was requested by the Commissioner in Notice No. 12 to initiate inquiries in its community to identify people and organizations who are sponsoring reputable programs for combating drug abuse and narcotics use and to thereafter seek to cooperate with these programs. It was urged particularly that interested players be encouraged to volunteer to take an active and visible role wherever possible.

Studies dealing with the great increase in drug abuse being experienced in this country state drugs themselves are not really the problem; the use of drugs often reflects the difficulties some people have in coping with the complexities of life. An important part of the solution to this problem is community action programs that will present alternatives to chemically induced escape from what they may consider overwhelming personal problems and handicaps. Medical advisors state that professional athletes can make a definite contribution since they command the respect and admiration of the overwhelming majority of the youth of this country. The youth particularly will listen and heed the advice of a successful athlete. This is borne out by programs already in existence being conducted by some of our ball players. For example, Jim Lefebvre and Wes Parker of the Los Angeles Dodgers and a Los Angeles radio station disc jockey have been making public appearances for over a year. In preparation for these appearances, Parker and Lefebvre attended a cram course on drugs and learned the basic facts concerning effects of marijuana, amphetamines, LSD, heroin and all the commonly used drugs of abuse. Since then, they have made talks and engaged in rap sessions with thousands of young people at schools, musical programs, amateur athletic events and on radio and television. They try to reach the kids who might be thinking of trying drugs or who may have used drugs a few times. The objective of the ball players is to try to strengthen a youngster's outlook on life, to encourage him to work hard for worthwhile goals in sports or whatever may be their interests. These ball players receive many more requests for appearances than they can handle. Many other baseball players are participating in similar programs. In the Boston area, Carl Yastrzemski and Reggie Smith, along with athletes from other professional sports, have been active in a popular and well-received program. The Philadelphia Phillies club has activated a program with the cooperation of Philadelphia District Attorney Arlen Specter and players Byron Browne and Larry Bowa have been publicly complimented for the effectiveness of their working with youth groups in fighting drug abuse. Ernie Banks has long been active in drug abuse programs. Space limitations preclude listing other players who are already actively engaged in community action drug abuse programs.

Authorities who have viewed the results of these programs unanimously report that the image of a professional baseball player who has reached the goals of physical fitness and athletic ability to enable him to play at the top of his sport exerts a powerful influence on young people when he cautions them not to "cop out" through use of drugs and ruin any chance they have to succeed at the sport or profession of their choice. The authorities state that players and others in Baseball can make an effective contribution in the fight against drug abuse and narcotics addiction that has reached dimensions of a national emergency.

The Commissioner on April 5, 1971, in a bulletin to all Major and Minor League Clubs, requested that all Baseball clubs endeavor to assist in local Community Action Programs. A pertinent part of that bulletin is set forth hereafter for the information of all Baseball clubs personnel:

"*Community Action Programs* — It is requested that each club seek ways in its City and Community to increase its participation in Community Action drug-abuse programs. In every major city there are programs designed to combat drug abuse. The sponsors of these programs can be identified by contact with, among others, the following authorities:

Department of Health Education & Welfare Regional Office
Federal Bureau of Narcotics & Dangerous Drugs Regional Office
State Bureau of Narcotics & Dangerous Drugs Regional Office
Mayor's Office
Police Department
Prosecutor's Office
City and State Correction Offices
News Media Representatives
United Fund-Community Chest, etc.
Educational Organizations such as Junior Highs, High Schools, and Colleges
Amateur Athletic Organizations

Each club should initiate inquiries in its community to identify reputable programs for combating drug abuse and narcotics use, and thereafter, to cooperate with these programs. It is urged particularly that interested players be encouraged to volunteer to take an active and visible role wherever possible. The information presented at the seminars by the guest speakers and particularly by players who have been participating in such programs indicated clearly that our Baseball players, by taking an active role in the crusade against drug abuse, contribute in a most effective way towards reducing the incidence of this insidious menace particularly with respect to the young people where inroads have been the greatest."

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Law Enforcement and Rehabilitation Aspects of The Drug Abuse Problem

All authorities on the subject of illegal use of narcotics and dangerous drugs are in agreement that in this country in recent years the use of these substances has been spreading with lightning swiftness, particularly among our young people. The use of hard narcotics has become commonplace among high school and college students and occurs even at grade school level. It is estimated that "millions" of Americans each year illegally use "billions of capsules" of the amphetamine and barbiturate drugs.

On June 18, 1971, President Nixon stated drug abuse had assumed the dimensions of a national emergency. He announced a stepped-up Government program that places priority on (1) Rehabilitation and treatment of persons addicted to narcotics and dangerous drugs; (2) Education towards the prevention of drug abuse; (3) An increased enforcement effort with respect to illegal traffic in narcotics and dangerous drugs.

State and Federal authorities dealing with this problem generally take the position that users of narcotics and dangerous drugs are sick people in need of treatment and rehabilitation. There are treatment and rehabilitation facilities available in all states and in the major cities.

Due to the tremendous increase in the illegal use of drugs and narcotics in this country, this has become the number one enforcement problem of today. In addition to the Federal Narcotics Enforcement Agencies, nearly every city and state police department now has a "Narc" Squad, as it is called, working on narcotics matters.

There are Federal laws governing drug abuse and narcotics use. There are also state laws and city ordinances. The Federal law is known as The Comprehensive Drug Abuse Prevention and Control Act and was passed in October, 1970. This law provides for tight control of dangerous substances and it classifies drugs into five schedules. The schedules are based on the degree of abuse potential, the known effect, harmfulness, and level of accepted medical use. For example, Schedule I lists substances with a high potential for abuse and no accepted medical use, and includes heroin, marijuana, LSD, mescaline, and peyote. Schedule II lists substances with a high potential for abuse and a restricted medical use — it includes methadone and liquid injectable methamphetamine, better known as "speed". Also the amphetamines and barbiturates, better known as greenies — bennies — yellow jackets — and other such names. While these drugs have accepted medical use, they also have a high potential for psychological dependence and psychological harm. The above is a brief and incomplete list of items included in the Federal law.

The law provides penalties for the unlawful manufacture, distribution, or possession of any of the controlled substances described in the schedules, including all of those mentioned above. For example, it provides that illegal possession of controlled substances such as an amphetamine or marijuana by a first offender, for his own use be treated as an offense under the law punishable by a prison term and or a fine. Those who voluntarily submit to rehabilitation are seldom prosecuted. However, with regard to the pushers, they can expect vigorous prosecution with heavy fines and imprisonment if convicted.

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A bulletin, providing information and instructions concerning Baseball's Drug Education and Prevention Program, was distributed on April 5, 1971 by the Baseball Commissioner to the administrative officials of all Major and Minor League Ball Clubs. Due to it's length it is not being reproduced in full herein, however; Items 7 and 9 of this bulletin are set forth below for the information and guidance of all Baseball clubs personnel:

"7. *Reporting Cases of Illegal Drug Use* — It is being made a requirement that all instances of illegal drug use or involvement, whether known or suspected, by Major League club personnel be promptly reported by the General Manager to the Commissioner's Office. Instances of illegal drug use or involvement, whether known or suspected, by Minor League personnel are to be reported to the Office of the President of the National Association of Professional Baseball Leagues.

9. *Disciplinary Action* — Our emphasis is on education, prevention, and rehabilitation where necessary. At the same time, the program must have disciplinary structure if it is to be effective. Obviously, Baseball must insist its personnel comply with the federal and state drug laws. It is your obligation to be familiar with these drug laws. For your information, the unprescribed possession or distribution of amphetamines and barbiturates (including 'greenies') is a violation of federal and state laws. Discipline will be considered by the Commissioner's Office in cases of illegal involvement. Such matters will be handled on a case-by-case basis. The Commissioner will seek to obtain all available facts relative to each case, secure advice of the team physician, consider what action the club has taken, and thereafter make a judgment of the matter."

APPENDIX 29

MARIJUANA USE AMONG ATHLETES

(By Lee D. Foreman)

(Stanford Law School, May 1971)

During the spring semester, 1971, a survey was taken among the members of the football team of a large western university and their close associates to determine their attitudes toward, and use of, marijuana and other drugs. The purpose of the survey was to determine the relationship, if any, between a student's use of marijuana and his participation and success in a rigorous intercollegiate athletic program. It is sometimes alleged that the pattern of drug use within a university community is not uniform, that here exist pockets of students within the undergraduate populace who use marijuana and other drugs significantly less than does the rest of the community. If this were true, it might be that varsity ahletes would comprise one such group. The university where the study was done offered the opportunity for comparison between a relatively sophisticated undergraduate populace and a highly competitive football team, and it was hoped that this survey would test the "pocket" theory in the case of varsity football players.

The survey was given to athletes who participated in the varsity football program during autumn, 1970, a season during which the football program was unusually successful. A roster of all those participating in the program was obtained from the university Athletic Department, and an effort was made to contact all those persons whose names appeared on the list. Not all were available, but a sizeable sample was reached.

In addition, the questionnaire was also submitted to a number of people who, although they were not football players themselves, lived with, or were otherwise in close association with, the athletes contacted.

For the purpose of trying to determine if there was any relationship between marijuana use and individual success within the intercollegiate football program, the athletes were sub-divided. Those who were successful to the extent of making the first or second team (as listed on a mid-season game program) were grouped together. There were thirty-five in this sample, which may be subsequently referred to as Group I. Those athletes who were either red-shirted during the season (ineligible for play) or who otherwise failed to make the first or second team comprise a second group (twenty in the sample, Group II.) A third group is comprised of those contacted who were not participants in the varsity football program (twenty in the sample, Group III.) Finally, there is a group of individuals who had been a part of the football program previously, but who had discontinued their association with varsity athletics (nine in the sample, Group IV.) Though this last group is too small to give any assurance of reliability, the data is presented anyway.

In addition to measuring actual usage, the questionnaire was designed to probe the attitudes of those interviewed toward certain social issues, including the marijuana laws now in force. The question designed to probe these attitudes are also analyzed through cross-tabulations with such factors as class in school, grade point average, political outlook, and average alcohol consumption.

As far as use of marijuana is concerned, there do not seem to be any significant differences among the four groups, as evidenced on page 4. In all of the groups, at least 70% had tried marijuana, and the best athletes (Group I) revealed a slightly higher usage percentage than either Group II or Group III. Furthermore, the percentage of football players who have tried marijuana is in keeping with the undergraduate average as revealed by previous studies on the same campus. One such study, "Marijuana Use on a Campus—Spring 68–69," by Michael L. Boreing and Emily Garfield (hereinafter referred to as the Boreing-Garfield report), revealed that 72% of all undergraduate males tested, and approximately 77% of those males tested who were not freshmen, had at least tried marijuana. When compared to this latter figure (there were no freshmen included within the present survey), it would appear that only a slightly lower percentage of the football players have tried marijuana (74% of Group I and Group II taken together.) With regard to the use of other drugs, Group I also showed a somewhat higher use than did the other groups of amphetamines, mescalline, and LSD as well. When amphetamine usage alone is examined, the athletes in all groups appear to use them more than do the non-football players (Group III), with the most successful athletes showing almost twice as high a percentage of use as the non-athletes. This result obviously lends a certain amount of support to the often heard allegation that modern athletes sometimes use amphetamines to improve their athletic performance.

SUBSTANCES TRIED

[In percent]

Codes	Have tried marihuana	Have never tried marihuana	No answer	Have tried amphetamines	Have never tried amphetamines	No answer	Have tried mescaline	Have never tried mescaline	No answer	Have tried LSD	Have never tried LSD	No answer
Group I: 1st and 2d teams	77	23	0	43	49	2	26	71	3	17	80	3
Group II: Other players	70	30	0	30	65	5	15	80	5	5	90	5
Group III: Nonfootball	75	25	0	25	70	5	20	80	0	5	95	0
Group IV: Former athletes	100	0	0	67	33	0	44	56	0	11	89	0

AVERAGE USAGE

[In percent]

Codes	How often is alcohol used											How often is marihuana used										
	Daily	4 to 7 days a week	2 to 3 times a week	Once a week	Twice a month	Once a month	Infrequently	Only used it 1 or 2 times	Stopped using it	Never used it	No answer	Daily	4 to 7 days a week	2 to 3 times a week	Once a week	Twice a month	Once a month	Infrequently	Only used it for 2 times	Stopped using it	Never used it	No answer
Group I: 1st and 2d teams	0	14	31	26	11	3	9	3	3	0	0	0	3	11	20	9	3	17	9	6	23	0
Group II: Other players	10	0	5	35	30	5	5	0	0	10	0	5	5	10	15	0	5	30	0	0	30	0
Group III: Nonfootball	0	10	25	30	15	10	10	0	0	0	0	0	0	15	5	15	5	15	10	10	25	0
Group IV: Former athletes	0	0	44	33	11	11	0	0	0	0	0	0	0	44	33	0	0	22	0	0	0	0

Though very high percentages of all groups reported having tried marijuana, a much smaller proportion appear to be regular users. Though it is difficult and somewhat arbitrary to decide where the cut-off line for "regular usage" should be drawn, to draw it at a minimum usage of twice a month suggests a certain regularity of use and presents a definite pattern. 43% of Group I, 35% of Group II, and 35% of Group III use marijuana at least twice a month. It is also clear that marijuana is not as popular a drug as alcohol is with any of these Groups (see page 6). Each evidences around 80% alcohol usage at least twice a month. The 35–40% regular marijuana usage figure is once again similar, if a bit lower, than that which might be expected from a survey of the undergraduate populace as a whole. The Boreing-Garfield report indicated that 16% of those interviewed used marijuana at least twice weekly. The present survey reveals that 14% of Group I, 20% of Group II (16% of the athletes taken together), and 15% of Group III use marijuana this often. The former football players, Group IV, reveal high drug use generally. 88% of this Group drink, and 77% smoke marijuana on a regular basis. It must be noted again, however, that the size of the sample makes this result no more than suggestive.

Athletic activity and success also do not seem to be affected by how often marijuana has been smoked or by how much is smoked each time. The figures on page 8 show that in every group tested one-fifth to one-fourth had smoked marijuana more than one hundred times, with the rest of the responses being quite spread out. All groups also reported smoking roughly the same amount on each occasion. Signicantly more people in each group suggested that one or two joints were smoked by them on an average occasion than suggested any other amount. It is interesting to note that the use of large amounts of marijuana on a given occasion is very rare. Only one person out of all the groups reported smoking more than four joints on an average occasion.

Those interviewed for this survey seem very aware, or at least of the belief, that a sizable proportion of other undergraduates at the university smoke marijuana. About 10–15% of each Group estimated this proportion to be under 60%, and these responses may fairly be described as bad or aberrant estimates. On the whole, each group showed an equally high awareness that many of those around them at the university smoke marijuana.

Perhaps most interesting of all the results obtained by this survey are those, fully listed on page 9, pertaining to the percentage of those who have used marijuana who have told their parents that they have done so. Group III, the non-athletes, indicate that twice as many of them have told their parents than have not, while at the other extreme, Group I, the best football players, reveal that nearly two-thirds of the smokers in that group have never told their parents that they smoke marijuana. The Boreing-Garfield report suggests that within the undergraduate populace as a whole about 46% of the marijuana smokers can be expected to have told their parents. As they filled out the questionnaire, several of the better athletes expressed their fear that the football program would not benefit from publicity that many of the players were "heads." This kind of self-consciousness and concern with image seems very likely to be related to the low percentage of the better players who have informed their parents that they smoke marijuana. There does appear a greater reluctance among the athletes to be identified as drug users.

[In percent]

Codes	How many times have used marijuana								Average number of joints smoked						
	Never	Once or twice	3 to 5	6 to 10	11 to 20	20 to 100	More than 100	No answer	Less than 1 joint	1 to 2	3 to 4	5 to 6	More than 6	Never use it	No answer
Group I: 1st and 2d teams	23	9	9	9	11	14	26	0	6	51	9	3	0	29	3
Group II: Other players	30	0	10	20	0	15	25	0	5	40	20	0	0	30	5
Group III: Nonfootball	25	10	15	15	5	10	20	0	10	50	5	0	0	35	0
Group IV: Former athletes	0	0	11	11	11	44	22	0	11	56	33	0	0	0	0

[In percent]

Codes	What percent of Stanford undergrads do you think have tried marihuana?											If you have used marihuana, do your parents know you have?			
	1 to 10	11 to 20	21 to 30	31 to 40	41 to 50	51 to 60	61 to 70	71 to 80	81 to 90	Over 90	No answer	Yes	No	Have never used it	No answer
Group I: 1st and 2d items	0	0	0	0	0	9	20	29	26	17	0	26	49	20	5
Group II: Other players	0	0	5	5	5	0	20	35	25	5	0	35	30	25	10
Group III: Nonfootball	0	0	0	10	0	0	10	35	40	0	5	50	25	20	5
Group IV: former athletes	0	0	0	0	0	11	22	44	11	11	0	33	56	0	11

ATTITUDES TOWARD LAWS

[In percent]

Codes	Description of present laws as:—						Should marihuana be legalized			
	Far too harsh	Harsh	About right	Lenient	Far too lienient	No answer	Yes	Yes, with restrictions on use	No	No answer
Group I: 1st and 2d teams	66	14	14	3	0	3	34	51	14	0
Group II: Other players	65	30		0	0	0	40	45	5	10
Group III: Nonfootball	55	35	5	5	0	0	55	30	5	10
Group IV: Former athletes	67	33	0	0	0	0	44	56	0	0

EFFECTS OF LAWS

[In percent]

Codes	Have the laws affected your use of marijuana								Would users use it more often if it were legal			Would nonusers try it if it were legal		
	No effect on users	No effect on nonusers	Always uncomfortable about breaking a law	Hesitated using it the 1st time	If you are careful you won't get caught	Law is unequally administered	No one get busted	Laws have prevented use	Yes	No	No answer	Yes	No	No answer
Group I: 1st and 2d teams	37	26	23	34	20	40	3	0	19	81	0	[1] 12	[1] 62	[1] 26
Group II: Other players	25	35	0	25	35	35	0	0	21	79	0	[2] 17	[2] 50	[2] 33
Group III: Nonfootball	35	35	10	30	15	15	5	5	20	80	0	[3] 60	[3] 40	[3] 0
Group IV: Former athletes	44	0	22	33	33	56	0	0	11	89	0	([4])	([4])	([4])

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[1] 8 in sample.

[2] 6 in sample.

[3] 5 in sample.

[4] No. nonusers.

As far as attitudes toward existing marijuana laws are concerned, there was considerable unanimity of opinion exhibited by the various groups tested. As evidenced by the chart on page 11, 80% of Group I, 95% of Group II, and 90% of Group III would describe the present marijuana laws either as harsh or as far too harsh. No reason is suggested to explain why the figure for Group I, the best football players, lags below that of the other two Groups. It seems of doubtful significance. All three Groups showed that 85% of those interviewed favor the legalization of marijuana (though a plurality of both groups of football players would insist on a restricted form of legalization.) As a matter of comparison, the Boreing-Garfield report showed that 93% of those tested described the marijuana laws as too harsh, and that 77% of those tested favored the legalization of marijuana (including a restricted form of legalization.) It is interesting to note that the football players who enjoyed the greatest athletic success, while evidencing the highest figures for use and regular use of the three Groups, show the lowest percentage favoring an unrestricted legalization of marijuana.

Another interesting question is the extent to which the existing marijuana laws have actually affected the use of the drug by those in the sample. Question 30 on the form (see Appendix A following) was designed to allow a person to select many ways in which the laws had affected his use, and the figures are found on page 13. 63% of Group I, 60% of Group II, and 70% of Group III positively indicated that their decision whether or not to smoke marijuana was made independently of any consideration of the present laws. Though a consistantly high percentage of each group indicated their awareness of the laws through their statement of hesitation before using it the first time, the failure of the laws as a deterrent force on these men is well illustrated by the fact that only one person among the total of 84 responding indicated that the laws had prevented his use of marijuana. Other frequent responses were that the laws were unequally administered, and that if a person is careful he will not get caught. Both of these latter responses may reflect an awareness, or a belief, that the university campus is a very safe place to smoke marijuana.

The ineffectiveness of the present laws is further illustrated on page 13 by the showing that only one of five persons in each group who use the drug would use it more often were it legal. Similarly, small percentages of the non-users indicate that were marijuana legal, they would be more inclined to smoke it (though these samples are so small that irregularities such as that shown for Group III may be expected.) Overall, these figures may fairly be taken to further show the relatively minor effect of the laws upon usage, even to the extent of failing to curb the level of usage of those who presently use it illegally.

Finally, the figures for the buying, selling, and possessing of marijuana are shown on page 15. The figures do not seem to vary much from group to group, though the percentage of Group I (best players) having sold marijuana appears to be slightly higher than those for the other two Groups. In general, the percentages of people who have bought or given marijuana to others are much higher than the figures for sales (though the percentage of Group III having bought marijuana seems low.)

In conclusion, several things may be suggested from the results of this survey. In the first place, though there may be pockets within the university where marijuana is not used, varsity football players do not appear to constitute such a pocket. Neither these players nor their immediate associates (Group III) appear to differ significantly in incidence of use, or in regular use, from the undergraduate populace as a whole, though they may be slightly lower in many respects.

There similarly does not seem to be any adverse relationship between marijuana and other drug usage and athletic success. On the whole, the most successful athletes appeared to have a higher incidence of drug usage than did the other groups. In actual fact there may be other variables involved which could account for this difference. Group I is an older group of individuals than are the other Groups, and age (perhaps allowing a greater familiarity with drug usage) may account for a higher usage by the players themselves. The Boreing-Garfield report also suggests that usage generally may be expected to be higher among older student groups being tested. This paper will yet examine the data gathered by this survey according to other variables to investigate other relationships to drug use.

POSSESSION AND SALES

[In percent]

Codes	Have bought marihuana	Have never	No answer	Have given marihuana to another	Have never done so	No answer	Have sold marihuana	Have never sold	No answer	Have sold it at cost	Have never	No answer	Have sold it for a profit	Have never	No answer
Group I: 1st and 2d terms	40	60	0	43	57	0	23	77	0	20	74	6	11	86	3
Group II: Other players	45	55	0	45	55	0	15	85	0	15	70	15	5	80	15
Group III: Nonfootball	30	60	10	45	50	5	15	85	0	10	70	20	10	75	15
Group IV: Former athletes	67	33	0	67	33	0	44	56	0	56	33	11	0	89	11

[In percent]

	Have tried marihuana			Use marihuana regularly (twice a month or more)			Would describe present laws as					Think marihuana should be legalized				Have tried amphetamines		
	Yes	No	No answer	Yes	No	No answer	Far too harsh	Harsh	About right	Lenient	No answer	Yes	Yes with restriction	No	No answer	Yes	No	No answer
Sophomores (22)	77	23	0	32	68	0	58	23	9	5	5	45	45	5	5	23	73	4
Juniors (33)	64	36	0	36	64	0	48	33	15	0	3	33	48	15	3	36	61	3
Seniors and unclassified (29)	93	7	0	58	42	0	76	24	0	0	0	42	48	3	7	59	41	0

[In percent]

Code	Have tried mescaline			Have tried LSD			Have bought marihuana			Have given it to another			Have sold marihuana		
	Yes	No	No answer	Yes	No	No answer	Yes	No	No answer	Yes	No	No answer	Yes	No	No answer
Sophomores (22)	18	82	0	5	95	0	41	59	0	50	50	0	9	91	0
Juniors (33)	12	82	6	9	85	6	27	70	3	39	58	3	12	76	12
Seniors and unclassified (29)	41	59	0	17	83	0	55	45	0	52	48	0	38	62	0

[In percent]

Code	Have tried marihuana			Use marihuana regularly (twice a month or more)			Would describe present laws as					Think marihuana should be legalized				Have tried amphetamines		
	Yes	No	No answer	Yes	No	No answer	Far too harsh	Harsh	About right	Lenient	No answer	Yes	Yes with restrictions	No	No answer	Yes	No	No answer
Leftists (20)	90	10	0	70	30	0	75	20	5	0	0	60	30	5	5	65	35	0
Liberals (25)	76	24	0	40	60	0	68	28	4	0	0	40	56	0	4	28	64	8
Moderates (23)	83	17	0	31	69	0	52	39	4	4	0	26	65	4	4	43	57	0
Right of center (14)	50	50	0	21	79	0	36	21	29	0	14	29	29	36	7	21	71	7

[In percent]

Code	Have tried mescaline			Have tried LSD			Have bought marihuana			Have given it to another			Have sold marihuana		
	Yes	No	No answer	Yes	No	No answer	Yes	No	No answer	Yes	No	No answer	Yes	No	No answer
Leftists (20)	50	50	0	25	75	0	70	30	0	75	25	0	35	65	0
Liberals (25)	16	80	4	4	94	4	48	52	0	48	52	0	20	80	0
Moderates (23)	17	83	0	9	91	0	22	74	4	35	61	4	13	87	0
Right-of-center (14)	7	86	7	7	86	7	14	86	0	14	86	0	7	93	0

Finally, a few words should be said about Group IV. The few individuals in this Group consistently evidenced more drug use, often by a wide margin, than did any of the other Groups. Once again, however, the very small size of the sample suggests that it would be foolhardy to try and predict anything about the behavior and attitudes of former athletes from the responses of these few.

When the same data is cross-tabulated according to year in school, another pattern is indicated. Though the full pattern is best revealed by an examination of pages 18–19, it is clear that there is some relationship between year in school and drug usage and attitudes. Those in the survey who are seniors and unclassified students (in every case someone who was in his fifth year as an undergraduate), exhibit a very high incidence of drug usage, a very negative attitude toward the present laws, and a very strong feeling that marijuana should be legalized. Beyond this point, this part of the data is less clear. In many instances, the sophomores evidence higher drug usage than do the juniors, and they evidence a much more positive attitude toward reform of the present marijuana laws than do the juniors. Whether this reflects a particularly "drug-oriented" group of sophomores (perhaps due to experience with drugs in high school) or a particularly "anti-drug" group of juniors, it is impossible to state.

Next the data was tabulated according to self-described political position, the full results of which are shown on pages 20–21. The entire sample was broken into four groups for this tabulation: Leftists (consisting of seventeen persons who described themselves as Left-liberals, one Radical, and two Militants), Liberals, Moderates, and Right-of-Center (consisting of people who described themselves as Moderate-Conservatives and Conservatives.) Though surveys according to political persuasion have been done before, perhaps a few sentences describing the pattern which emerged from this tabulation would not be unwelcome. The survey definitely showed that those persons at the left of the political spectrum are more inclined to use drugs, and to favor the legalization of marijuana, than are those people who see themselves as political conservatives. The distinctions between the middle groups, the Liberals and the Moderates, were harder to draw. In some areas, notably use of amphetamines, the Moderates appeared to be more "liberal" than did the Liberals themselves. What is suggested is that the differences between these two groups are more in name than in terms of real differences in attitudes toward issues. With regard to the polar groups, however, the results are more striking. 90% of the Leftists have tried marijuana as compared to 50% of the conservative group, 70% use it regularly as compared to 21% of the conservative group, and so on in every instance. It should be pointed out however, that it is impossible to claim that attitudes toward drugs, especially marijuana, are unrelated to a person's self-described political outlook in the first place. Indeed, it seems very likely that a person who has smoked marijuana will think that a "liberal" thing to do, and so will subsequently describe himself as politically more leftward than he otherwise might. These things are so inter-related that the results of this part of the survey are perhaps not as interesting as they first seemed to be.

Next an attempt was made to ascertain whether or not there was a relationship between attitudes toward marijuana laws and drug usage generally and academic performances as measured by grades. The results of this tabulation are included on pages 24–25. On the whole, no relationship to academic accomplishment was discernible.

Finally, the data was cross-tabulated in an effort to determine if there was a relationship between alcohol consumption and the use of other drugs. For the purposes of this tabulation, the sample was divided into three groups: those who use alcohol more often than once a week (labeled as frequent alcohol users), those who use alcohol once a week on the average (labeled as moderate alcohol users), and finally those who use alcohol less often than once a week (labeled as infrequent alcohol users.) Even a cursory examination of the figures for various drug use on pages 26–27 will reveal what appears to be a definite relationship between the use of alcohol and the use of other substances. Those persons who use alcohol frequently also show a clearly higher rate of use of marijuana, regular use of marijuana, and use of amphetamines than do either of the other groups. Similarly, those who are infrequent users of alcohol also appear to be much less likely to use other drugs.

The figures are less dramatic for the hallucinogenic drugs, although the frequent alcohol users still show the highest incidence of use. It would appear from all tabulations done with this survey that the use of mescaline and LSD, always used only by a relatively small percentage, is more unpredictable than the use of any other substance. On the whole, the strong implication behind the results of this cross-tabulation is that the sample, and perhaps people in general, can be separated into "drug-users" and "non-drug-users." Those who are inclined to use any one drug, such as alcohol, appear to be more likely to use other drugs, such as marijuana and amphetamines, as well.

As far as attitudes toward the marijuana laws are concerned, this pattern does not continue to be as pronounced, however. Though those people who use alcohol infrequently are slightly less critical of existing laws, and slightly less in favor of legalization, the figures for all three groups are very high. It would appear that regardless of whether a person is generally a "drug-user", he is extremely likely to condemn the present legal restrictions on and penalties for the use of marijuana.

[In percent]

Codes	Have tried marihuana			Use marihuana regularly (twice a month or more)			Would describe present laws as—					Think marihuana should be legalized				Have tried amphetamines		
	Yes	No	No answer	Yes	No	No answer	Far too harsh	Harsh	About right	Lenient	No answer	Yes	Yes—with restriction	No	No answer	Yes	No	No answer
Grades (14) above 3.24	79	21	0	35	65	0	79	21	0	0	0	36	57	0	7	21	79	0
Grades (22) 3 to 3.24	86	14	0	37	63	0	54	41	5	0	0	45	36	14	5	36	64	0
Grades (30) 2.75 to 2.99	70	30	0	46	54	0	60	17	13	3	7	53	40	7	0	47	50	3
Grades (18) below 2.75	78	22	0	50	50	0	56	33	11	0	0	22	56	11	11	50	39	11

[In percent]

Code	Have tried mescaline			Have tried LSD			Have bought marihuana			Have given it to another			Have sold marihuana		
	Yes	No	No answer	Yes	No	No answer	Yes	No	No answer	Yes	No	No answer	Yes	No	No answer
Grades (14) above 3.24	14	86	0	14	86	0	21	71	8	21	71	8	14	86	0
Grades (22) 3 to 3.24	14	86	0	9	91	0	36	64	0	50	50	0	9	91	0
Grades (30) 2.75 to 2.99	40	60	0	17	83	0	43	57	0	47	53	0	23	77	0
Grades (18) below 2.75	17	72	11	0	89	11	56	44	0	56	44	0	33	56	11

[In percent]

Code	Have tried marihuana			Use marihuana regularly (twice a month or more)			Would describe present laws as—					Think marihuana should be legalized				Have tried amphetamines		
	Yes	No	No answer	Yes	No	No answer	Far too harsh	Harsh	About right	Lenient	No answer	Yes	Yes, with use restrictions	No	No answer	Yes	No	No answer
Frequent alcohol users (31)	97	3	0	64	36	0	61	35	3	0	0	35	56	3	6	65	33	2
Moderate alcohol users (25)	80	20	0	40	60	0	60	28	4	4	4	44	48	8	0	28	68	4
Infrequent alcohol users (28)	54	46	0	26	70	4	61	18	18	0	4	39	39	14	7	25	71	4

[In percent]

Code	Have tried marihuana			Use marihuana regularly (twice a month or more)			Would describe present laws as—					Think marihuana should be legalized				Have tried amphetamines		
	Yes	No	No answer	Yes	No	No answer	Far too harsh	Harsh	About right	Lenient	No answer	Yes	Yes, with use restrictions	No	No answer	Yes	No	No answer

[In percent]

Codes	Have tried mescaline			Have tried LSD			Have bought marihuana			Have given it to another			Have sold marihuana		
	Yes	No	No answer	Yes	No	No answer	Yes	No	No answer	Yes	No	No answer	Yes	No	No answer
Frequent alcohol users (31)	35	61	3	13	84	3	55	42	3	58	39	3	29	68	3
Moderate alcohol users (25)	8	88	4	8	88	4	40	60	0	36	64	0	16	84	0
Infrequent alcohol users (28)	25	75	0	11	89	0	25	75	0	39	61	0	14	86	0

[In percent]

Codes	Have tried mescaline			Have tried LSD			Have bought marihuana			Have given it to another			Have sold marihuana		
	Yes	No	No answer	Yes	No	No answer	Yes	No	No answer	Yes	No	No answer	Yes	No	No answer

APPENDIX 30

PUBLIC SCHOOLS OF THE DISTRICT OF COLUMBIA,
DEPARTMENT OF HEALTH, PHYSICAL EDUCATION,
ATHLETICS AND SAFETY,
Washington, D.C., July 16, 1973.

Senator BIRCH BAYH,
Chairman, Juvenile Delinquency Subcommittee,
Senate Office Building, Washington, D.C.

DEAR SENATOR BAYH: On Thursday, July 12, 1973 the Athletic Director for the D.C. Interhigh, and I attended a hearing of the Subcommittee to Investigate Juvenile Delinquency with respect to drug abuse by athletes.

Some of the testimony at this session seem structured primarily for those athletes in the seventeen year age group and above. The general indictment of professional athletes and professional football players in particular needs some defense from those of us who labor in the vineyard of the nation's youth.

The article by Mike Roberts in the Sunday Star 7/15/73 with accompanying cartoon really prompted this immediate reaction.

I have no statistics on the use of drugs by professional athletes but I do have considerable knowledge of the results of their commercials against drug use and abuse by our city youth.

Unfortunately much of the testimony I heard at the July 12 Subcommittee Hearing and the followup article by Roberts omits the little fellow age 7 to 12, who really relates to the effort by professional players to combat the drug problem.

I have been actively engaged in the Drug Education effort since 1967, and am pleased to report that the efforts by professional football players who lend their names and pictures in the battle to obliterate drug abuse has been received with more enthusiasm by "inner city youngsters" than perhaps any other educational tool.

To lump all players in the same "bag" as Mr. Roberts has done is not only a disservice to the athletes, but to thousands of those forgotten little kids who see in the Larry Browns', Gilmers', Sistrunks', Namaths', and hundreds of others like them, a hero-image who can, and often do shape their lives for the better.

As an educator whose disciplines encompass athletic activities and health education, I certainly hope that loose testimony and irresponsible efforts by reporters will not destroy for those still unsophisticated youth, an image of someone worthwhile and of someone to whom they can relate.

Drug abuse is on the decline in the cities and among youth of school age. Here in our own nation's capitol the Redskins have certainly played a significant role. Thousands of the attached posters have been distributed to school children and are eagerly sought after by hundreds of kids.

I am also attaching for your records a circular distributed to our interhigh coaches almost a year ago concerning drug use. The present Board of Education has now separated Athletics from the general supervision of this office, and has so decimated the school department your father helped to structure, and mold, as to make it almost unrecognizable. Strong supervision and leadership of staff instructional departments seems to be a "frill" in the new educational concepts supported by our present Board.

May I take this opportunity to commend you for your interest in this very vital problem. All youth are affected by this insidious threat of drugs. What happens at the top with the drug cult affects those at the bottom and vice versa. Efforts such as yours, when carried to an ultimate end will certainly help in the elimination of the drug cancer from our society.

Sincerely,

FRANK P. BOLDEN, *Director.*

DEPARTMENT OF HEALTH, PHYSICAL EDUCATION, ATHLETICS AND SAFETY,
Washington, D.C., August 21, 1972.

Memorandum to: All High and Vocational High School Coaches, All High and Vocational High School Principals.

Subject: Use of Steroids or other Drugs for Improvement of Athletic Performances.

Under no circumstances are coaches or teachers of any sport to issue, prescribe, or make available to students on their school teams any of the *Anabolic*

Steroids, or other *magic pills* alleged to be used by professional and some Olympic Athletes, for the purposes of adding weight, strength, and agility

Medications containing drugs are prescribed through the family physician only, with the advice and consent of the parent.

Thank you for your cooperation in this matter.

FRANK P. BOLDEN, *Director.*

[From the Sunday Star and Daily News (Wash., D.C.) July 15, 1973]

MEGGYSEY, SCOTT: WELL, THEY TRIED

(By Mike Roberts)

The legitimization of the drugs-in-sport issue took place on the evening of Jan. 18, 1972, in Birmingham, Ala. This turning point was clearly denoted by the fulminations of Spiro T. Agnew.

In an address to the Touchdown Club of Birmingham, the Vice President reviled Jack Scott and Dave Meggysey, who were trying to tell the country that, among other afflictions, sport had a monkey on its back.

Agnew chose his audience purposefully. Since the event was an obeisance to the football gladiators of Alabama and Auburn Universities, the vituperation of the pair of jocks-turned-hippie was guaranteed to stir lusty approval.

But the Veep's very zeal to shoot down his targets ended the pretense that establishment society had no genuine worries about the charges that athletes were involved in drugs.

In the year and a half since then, there [illegible]s been a lot less ridicule of Meggysey, who dropped out of pro football to write his brief against the game, and Scott, who founded the Institute for the Study of Sports in Society.

Their vindication has been growing full. Others have been coming forward regularly to support the claims that medicinal aid in athletics was getting out of hand.

Even more telling, the issue has been getting a nicely publicized airing by a star-quality senator, Birch Bayh of Indiana—a presidential hopeful, no less, entertaining tales of doped-up jocks in a Senate hearing room.

"It's interesting," Meggysey mused from his Berkeley, Calif., home, "how over the period of the last three years the things I've been saying have been proving to be true. The drug thing is one."

Yes, the drug thing certainly is one, and Meggysey doesn't want to see pro football get away without any scars now that the battle has been joined. His ally, Scott, carried the fight well last week.

Scott kept telling Bayh things he didn't want to hear. The senator couldn't understand why his witness refused to acknowledge that the National Football League's anti-drug commercials are a laudable service to the public.

"The NFL coverup," Scott called it. "It's a coverup plain and simple. There's nothing wrong with trying to keep people off drugs, but a responsible person deals with his own area, too. Rozelle should be more concerned with the drug problem in football."

Scott's point is a persuasive one. The NFL, as well as the NCAA and the baseball leagues, uses its hirelings to lecture the public on the evils of heroin and the like, with nary a word about the magic potions the jocks use to prop themselves up.

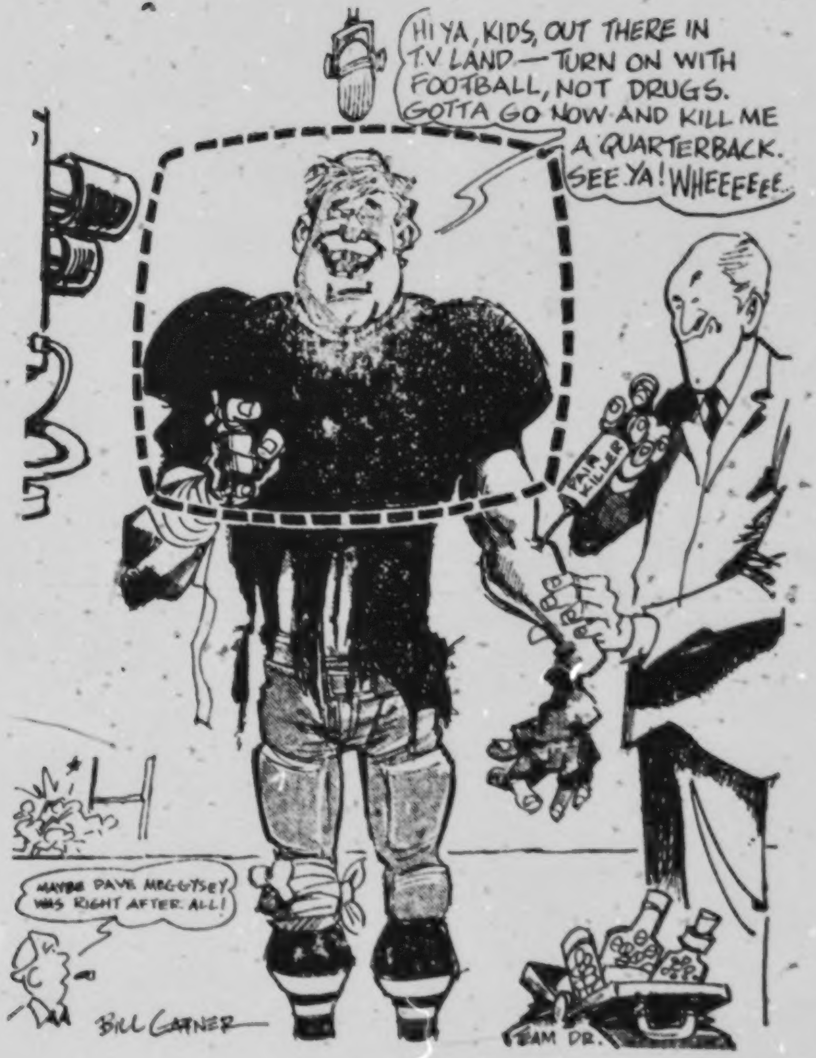
"Their drug program is a public relations program," he said. "It's calculated to take the attention off themselves, to give the impression that drug-taking is restricted to hippies and ghetto dwellers.

"Young people are much too sophisticated and wise for such nonsense: Get high on sports, not drugs. People are supposed to believe if they get Johnny to cut his hair and try out for the football team they'll have the problem licked.

"And another thing—they're so hypocritical. They say nothing about the social conditions that create drug abuse. Just to tell someone not to use drugs doesn't say anything."

No, as slick as those ads are, they just won't do the job, now that the public knows what it does about athletes and their chemical courage.

Scott once again has shown a grasp of the realities. Neither a PR campaign nor an Agnew treatment can brush aside the truths he's telling.


HI YA, KIDS, OUT THERE IN T.V. LAND—TURN ON WITH FOOTBALL, NOT DRUGS. GOTTA GO NOW AND KILL ME A QUARTERBACK. SEE YA! WHEEEEEE...
PAIN KILLER
MAYBE DAVE MEGGYSEY WAS RIGHT AFTER ALL!
BILL GARNER
TEAM DR.

(B) DRUGS ABUSED BY ATHLETES—AMPHETAMINES, STEROIDS AND OTHERS

APPENDIX 1

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A RATIONAL APPROACH TO DRUG ABUSE PREVENTION

(By Samuel Irwin, Ph.D.)

In 1968 there were estimated to be some five to six million alcoholics in the United States and three to four million heavy alcohol users, increasing at a rate of 200,000 persons annually. In late 1971, the Department of Health, Education, and Welfare reported alcoholism to be increasing at the incredible rate of 500,000 persons annually! Use of other drugs such as marijuana, heroin, LSD, and the amphetamines has risen in popularity from a relatively minor number of users to adherents on a major national scale, estimated at nearly 24 million for marijuana use alone—teenagers and young adults predominating.

It has been easy to attribute such an extraordinary increase in drug use and abuse to a breakdown of moral fiber, citing excessive permissiveness as a prime cause, meanwhile depending on heavy law enforcement and a crackdown on all drug use to diminish the problem. But such measures are not working, and we must look further for root causes, with a needed reappraisal of our attitudes toward drug use. Instead of worrying constantly about where to put the blame, we might better study the societal context from which drug use springs and work to alleviate the conditions that generate drug abuse.

As a beginning we can try to grasp the plight of an individual completely overwhelmed by frustration, alienation and a powerlessness to otherwise control the intense feelings of depression, anxiety and anger that flow from it. We can recognize and view with compassion his need for a "way out," choosing drugs as the easiest and most satisfying escape. We can demystify and defuse the emotional connotations of such terms as "drug," "drug abuse," "psychologic or physical dependence" and come to understand them in their broader meaning. We can understand the impact of widespread drug use on the goals, values and functioning of a society. We can admit that the major contributing forces to drug abuse are the pressures and inequities of society itself, with our drug laws and enforcement practices taking the lead in irrationality.

The environment is the principal architect of human behavior. Any real hope for drug abuse prevention must therefore begin with the individual, his family and his community. Drug abuse is only a symptom of a disturbance, the most available coping mechanism for a person in distress. As indicated by Alvin Toffler in his book *Future Shock*, we are at a major transition point in human history where a metamorphosis of our society is in progress. As our institutions and social mores rapidly change, some of the resulting deteriorations and upheavals in daily living are affecting all of us and will increasingly do so. There will be further stress and strain until the change to a totally new and viable social structure is complete. The drug abuse problem is caught up in this transition phase; we therefore must recognize how the state of society influences the state of the individual, how the state of the individual influences his relationship and response to drugs, and how all three interact and influence one another.

THE EVOLUTION OF DRUG USE

There has been no time in history that was free from man's constant search for substances from his environment that he might use to alter his perceptions and feelings. The drugs he used altered his behavior, thus changing his functioning in society. Accordingly, society and certain cultures and subcultures have tended to sanction the social use of drugs whose effects were most in accord with their values, goals and needs. The major change in recent years has been in the greater variety and availability of new drugs for use, rather than in the extent of drugs use by a population.

It is not by accident that Western man has embraced a whiskey culture. Alcohol relieves the tensions and anxieties that result from a competitive society and makes the passive, timid or withdrawn person more outgoing and aggressive. In the Far and Middle East where the ideal has been the contemplative or spiritual state with escape from worldly cravings, the use of opium and cannabis have been favored. The same selective process can be seen in gang subcultures in America where the "toughs" resort primarily to alcohol use and the "cools" to cannabis use. Even the pattern of drug use in response to personal need and societal demands changes with aging. There is a preference for stimulants to increase drive by young adults; tranquilizers to reduce anxiety in middle age, and sedative-hypnotics to promote sleep in old age.

A recent article in the *International Journal of the Addictions*[1] noted that the psychedelic drugs elicited quiet, mystical, introspective and nonviolent behavior; the amphetamines, gregarious, talkative and hyperactive behavior leading to paranoia and violence with increasing abuse; the barbiturates, lethargic, withdrawn and dulled behavior with abuse; and heroin, peaceful, relaxed and withdrawn behavior. One might also add that alcohol abuse elicits sociopathic, aggressive and depressive behavior.

Sociologists have been observing a counterculture revolution taking place in the United States which seeks a more contemplative, spiritual and nonviolent existence for its followers. If, as they say, cannabis reinforces these values, then in our emerging society it may well become the most favored drug. It may be that experience with marijuana (the most widely-used of the cannabinoids) and LSD has provoked the young users into considering this alternative way of life, encountering through drug action and modified perceptions a glimpse of a more spiritual, gentle relationship and attitude toward the environment and their fellow man.

In my judgment, drugs are not neutral in their effects on social functioning, attitudes and goals; they profoundly modify these. For those that choose an aggressive-competitive style of life and social organization, an alcohollike drug is their choice. For those that feel that such behavior no longer serves a useful purpose, the use of cannabislike drugs will be preferred. Our normal behavior varies with our mood and perceptions; these are modified by drug use. Our attitudes toward ourselves and the world today have in no small measure been shaped by the use of alcohol. Now they are also being shaped and modified by the use of cannabis (marijuana) and other drugs, perhaps in a new direction. Where a diversity of drugs is available for use, one can expect a diversity of effects perhaps more in keeping with the needs of a pluralistic society.

THE MODERN ROLE OF DRUGS

A Pandora's box is opened by the suggestion that one's view of "reality," attitudes, beliefs and functioning is shaped and molded by the social drugs we use. For one concerned about dealing with the "real" world, this can be frightening for we must now confess to be operating from partial "unreality." The nondrug user in our society is indeed a highly deviant minority; we are primarily a nation of drug users. Should the goal then be abstinence from all drugs? Does man really need drugs? At this point we should better define what a drug is and examine why the relationship between man and drugs may be a necessary one.

Footnotes at end of article.

A drug by definition is any chemical substance that modifies the structure or function of the tissues of the body. For convenience, pharmacologists distinguish between drugs and food because they are concerned with the medical or toxic uses of chemical substances. But these distinctions are of operational value only and do not truly exist. Food (a conglomerate of chemical substances that provide energy for body functioning) does modify tissue function and certain foods are associated with the development of various disease states. Certain vitamins (drugs) are essential to body functioning, as are certain trace metals, air and water. All of these, taken in excess, can lead to disease and death; all are potentially "dangerous" substances.[1]

Fluorides in drinking water, varying with the quantity ingested, can improve dentition (small amounts) or promote tooth decay (large amounts) and produce fluorosis. Lithium concentration in the drinking water in various areas of Texas has been shown to be inversely correlated with the incidence of mental illness requiring hospitalization.[2] Chemical pollutants in the air can cause discomfort, irritability and death.

A human is made up of chemicals and is greatly influenced by his chemical composition and environment—positively or negatively. He needs chemicals to survive, but there is a tender balance that sustains viability and health, and we may never know the extent to which our aggressive-warlike tendencies, religious views, perception of the environment, or mode of relationships is influenced by the food and liquids we ingest and the air we breathe or the additional beverages and chemicals we consciously and unconsciously ingest. Our sense of "reality" is the end-product, in part, of all of these. It is dependent on our state of mood and perceptions. The question, therefore, is not whether man needs drugs (chemicals) to survive, but rather one of how he would like to feel, perceive and function and to what extent these goals can be enhanced by chemical use.

There seems nothing intrinsically good or evil about drug taking; what makes it so depends only upon one's point of view. For example, are you disturbed when a psychoactive drug is used correctly and in moderation to enhance human performance, learning, lifespan or enjoyment? Or only when the use of drugs by a minority is immoderate and uncontrolled, impairing human function and promoting social deterioration or disease?

There is reason to believe that the human organism evolved more than 500,000 years ago, may be outmoded. According to Dr. L. Levi,[3] a great number of studies during the last three decades suggest that "man's phylogenetically old adaptive patterns, preparing the organism for fight and flight, have become inadequate and even harmful in response to the predominantly psychological or socio-economic stressors prevalent in modern society." It was suggested that the disorders that result (ulcers, hypertension, ulcerative colitis, asthma, cardiac infarct, mental illness or sociopathy, to name a few) can be prevented, at least partly, by a sensible restructuring of our society and institutions. They also can be reduced, I feel, by the appropriate use of drugs, similar to their therapeutic use by physicians. Changing the "human factor" which was genetically derived will not be easy; changing the "inhuman factor" through environmental control and the use of drugs may be the only available solution.

A distinction should be made at this point between the selective use of drugs that protect against stress and disturbances of mood and those that protect or produce the changes sought only by grossly altering the mood and perceptions of the individual. In the first instance, it is done *covertly*, where one can keep the "lid" on one's feelings and respond without the sense of having been drugged (as with lithium and certain major tranquillizers). In the second instance, it is done *overtly*, so that one is aware of being drugged. It is perhaps with the latter only that there is societal concern, for it is only when the effects of a drug are deemed pleasurable that the possibility for compulsive drug abuse exists. An added concern is the possibility for so distorting perceptions or cognitive performance as to impair human functioning—as with most of the drugs of abuse today when taken in excessive amounts.

Footnotes at end of article.

"Overt" drugs with abuse potential may be defined as having mild, moderate or marked observable effects as commonly used; or low, moderate or high hazard potential to the individual and society when misused or abused. For example, the caffeine in coffee and the nicotine in tobacco produce a moderate and high level of psychological dependence respectively and, because of this, are used by a large population with high daily frequency of intake. Because their effects are mild as most commonly used and tend to enhance rather than impair mood and performance, they offer no special hazard to the individual or society from psychotoxic effects except when taken in excess. With excessive use or in certain disease conditions, caffeine can activate psychoses and make body disorders worse while nicotine and the tars in cigarettes produce in time irreversible tissue damage, cancer and reduced longevity. Were it not for this hazard potential with chronic use, there would be little basis for concern over the use of cigarettes.

Consequently, the presence of even strong psychologic dependence to a drug (with rapid loss of an individual's control) need not be of concern, so long as the effects of the drug are mild and the hazard potential with chronic use is low—where the "benefits" to the individual outweigh the risks involved. The only real area for societal concern over drug use, therefore, is with drugs with more profound effects on behavior and functioning and greater hazard potential under the conditions of common use.

Drugs are merely another object in the environment with which a person can become involved and, in the process, can change how he feels and functions. That relationship can be constructive, benign or destructive, no less so than human relationships involving marriage, family, jobs, educational institutions or welfare. As with all other objects, a drug only has certain well identified properties or actions that are reasonably predictable. The outcome depends on the relationship and manner in which those properties are used, either to advantage or disadvantage.

Most people use alcohol because they know the extent to which it can soothe when they are troubled, enable them to sleep when sleep evades them, or to relax and give them courage when both the spirit and flesh are weak. There is nothing bad about feeling good or desiring to feel one's best, just as there is nothing wrong about sex only for pleasure. But problems can come from relating ineptly to drugs, and from not developing a variety of alternative ways for dealing with uncomfortable feelings and distress. A time out for pleasure and relaxation is a human need; a perpetual or almost continuous time out regardless of the object or relationship, can be a dead end street, preventing personal growth, self-esteem and a sense of identity from developing.

One can conceive of cultures or of individuals that do not need drugs and there is ample evidence of those who for personal or religious reasons choose not to use drugs. One who has a positive outlook on life, is in tune with the forces about him and is personally content and happy, can approach his life activities and pursuits with a spirit of acceptance and relaxation, and without worry about the ability to achieve goals or fulfill desires—such an individual (or culture) has no need for drugs and most certainly would not abuse drugs. But where large numbers of people find themselves frustrated, powerless and ridden with feelings of alienation, depression, anger and anxiety, yet called upon to function and compete, the need is great for drugs to enhance performance and soften the intensity of emotional feelings and anger. Without their availability, far more suicide, psychotic and neurotic reactions, and crimes of violence would be seen today.

So long as we remain unschooled in the skills and techniques needed to better relax, function and cope with environmental and personal needs and demands, drugs will play a very important role and will be used whether we like it or not; they are here to stay.

If they had no value, they would not be used. The issue is not do we or do we not need drugs, but how can we best use them and minimize the hazard. Drug education that seeks to discourage the use of drugs altogether is doomed to failure. Its proper role is to reach both the positives and negatives of drug use, and to teach how drugs can be most safely and positively used by those that seek to use them. However, it can also be used to teach alternatives to drug use for achieving desired goals.

Honest education (with lesser expectations than the complete denial of drug use) will at least provide a basis for informed decision-making and the more appropriate selection and use of drugs; that tendency should be encouraged rather than discouraged. What should be discouraged, for the young as well as the old, is the use of drugs as a substitute for problem-solving. Busy physicians and psychiatrists, unfortunately, often do the same for their patients, using drugs to ameliorate symptoms rather than trying to correct the root causes.

DRUG USE AND ABUSE

There is a distinction among drug use, misuse and abuse. *Drug use* results when the sought for effects of a drug are realized with minimal hazard, whether or not used therapeutically, legally or prescribed by a physician. *Drug misuse* occurs when a drug is taken or administered under circumstances and at doses that significantly increase the hazard to the individual or to others. *Drug abuse* follows when a drug is taken (sporadically, repeatedly or compulsively) to such degree as to greatly increase the hazard or to impair the ability of the individual to adequately function or cope with his circumstances.

Most illicit drug use seems at a "use" level not at an "abuse" level. We should distinguish between the two, because drug *use* is not a problem to the individual or to society; *drug abuse* is the problem, as is excessive misuse (though the demarcation between use, misuse and abuse is not always a clear one).

In further analyzing the use of a drug, one must distinguish among occasional, frequent and daily use, and the frequency with which daily doses are taken; also, how excessive and compulsive the drug-taking may be. For most of the psychoactive drugs, a single dose daily under appropriate circumstances to achieve the purpose intended could be considered drug use. An exception would be with the psychedelic drugs such as LSD or mescaline where even single doses weekly would constitute misuse or abuse. But the more frequently a drug is taken daily and the higher the doses taken, the greater the hazard potential. This is true whether drugs are prescribed by a physician or not.

Drugs mainly produce their effects by interfering with an enzyme system or some substrate of enzyme or cellular activity. In principle, one increases the probability for harmful tisue effects the more one keeps the tissues of the body saturated with drugs. The same may be true when one ingests the same foods daily. Much remains unknown about the potential hazard to the body from chronic drug adminstration. Because of this, repeated daily use of any drug or food should be avoided where possible to allow a drug- or even food-free period for return of the body tissues to normal. If this principle was adhered to, the individual could retain this level of control, there would be fewer problems with physical dependence or compulsive drug use. The use of cigarettes illustrates this: the average smoker takes 15 cigarettes a day or smokes about one every hour. This level is one of drug abuse, for it represents use with a high probability for tissue damage if continued over a period of years. In this instance, the damage is primarily to the individual. A "use" level of cigarettes would be less than five per day, preferably not daily; a similar level of alcohol probably would be about two to four ounces of 90 proof liquor daily.

In general, the frequency of alcohol or other drug use by a population has been found distributed on a "log normal" basis. This means that there are many light users, fewer moderate users, and even fewer heavy users (drug abusers). The curve is continuous, with no clear differentiation into users and abusers. One finds the abusers always are some predictable small percentage of the total population of drug users, regardless of how many drugs might be available legally. This means that there are only three possible ways to reduce the incidence of drug abuse: by an overall reduction of the per capita consumption of drugs and alcohol by a society; by developing social attitudes and peer pressures that would discourage gross intoxication or inebriation, and by creating a social and family environment more supportive and less destructive to individuals susceptible to drug abuse, and more rehabilitative when patterns of drug abuse appear.

A pattern of administration or reliance on psychoactive drugs can be seen as originating in many cases with the prescribing physician. Such drugs are usually prescribed several times daily over extended periods of time, and the patient requested to take the drug whether or not the symptoms for which it was prescribed are present. In most cases of this kind, it might be wiser for the patient to take the drug only when needed, or at least take an occasional (weekend) drug holiday.

Another form of misuse, if not abuse, is multiprescribing (polypharmacy), where the patient is instructed to take several drugs on a chronic daily basis. This can be potentially hazardous because little or nothing is known for most drugs about the dangers with chronic use of two in combination, let alone three or ten. Too often, also, physicians prescribe drugs without asking what else the patient is taking (prescribed by other physicians). The result of such practice has been a high incidence of adverse reactions to drugs, requiring treatment. The problem of drug misuse and abuse, thus, is not just with the lay public.

To reduce the dangers of such practices, guidelines could be made available through medical societies and taught in our medical schools to encourage the more appropriate, less potentially destructive prescribing practices by physicians. If necessary, a system of checks and balances could be developed against the abuse of drugs by physicians by better informing the public, alerting them to the possibilities for neglect or ineptness in prescribing.

PSYCHOLOGICAL AND PHYSICAL DEPENDENCE

Pharmacologists have been overly preoccupied with the psychological and physical dependence liability of drugs as though these features of drug action alone were the problems; they are not. The terms have been used so often in a careless, loose way, they can benefit from a fresh definition before going further. Psychological dependence means a craving for the repeated or compulsive use of a substance or activity because its effects are considered pleasurable or satisfying (primarily dependence). Or, as with drugs that produce physical dependence, it means a craving for a drug to prevent the aversive effects of withdrawal symptoms (secondary dependence). It is a pattern of behavior which varies from trivial reliance on a generally harmless substance or practice (such as the morning paper and coffee) to an intensive need for a drug which dominates virtually every facet of one's life (as is possible with food, TV watching, skiing, or a relationship to another person). A further distinction can be made between mere *gratification dependence*, where disturbing withdrawal symptoms after abstinence would be absent or minor, and *emotional dependence*, where treatment problems and withdrawal symptoms of emotional origin upon abstinence would be major (as with grief reaction upon loss of a loved one).

To quote Dr. M. H. Seevers of the University of Michigan,[4] "Having once experienced (psychoactive) drug effects, a large majority of the world population will inevitably become drug dependent." But even strong psychological dependence is not necessarily harmful, as with coffee, tobacco or food, where no psychotoxic effects occur. It becomes of concern only when the frequency and quantity of intake, coupled with the intrinsic properties of the drug, lead to effects which disrupt functioning or produce social deterioration or disease.

Physical dependence is a physiological state of adaptation to continuous use of a drug which results in a characteristic set of disturbing or life-threatening withdrawal symptoms when use of the drug is stopped. Its presence is unknown so long as the drug continues to be taken and is of no adverse consequence under such conditions.

In an exaggerated sense, man can be considered to have both psychological and physical dependence on air and food, withdrawal of which is life-threatening.

Footnotes at end of article.

The mere presence of psychological and physical dependence, thus, is of no necessary concern to the individual or society in the *absence* of drug-induced behavior or toxicity that can be deemed harmful.

RELATIVE HAZARD POTENTIALS OF DRUGS

Public discussion of drugs, and our drug laws have failed to distinguish among the relative hazard potential of drugs. They are merely discussed as "dangerous drugs" without reference to which one is the most dangerous, the next most dangerous, and why. Clearly, some drugs are more dangerous than others, and whether drugs produce psychological or physical dependence (except as it may affect the offspring of physically dependent mothers) are relatively minor criteria for judgment until it can be shown that major hazard results from their abuse.

More important criteria in judging a drug are the possibilities for death from an overdose or during withdrawal; irreversible tissue damage; physical deterioration; mental deterioration (as with an organic brain syndrome or psychosis); social deterioration; production of violence or passivity (amotivation); rapid loss of control; psychomotor impairment (coordination, memory, judgment, vigilance and perception); psychotic reactions; easy overdose at use levels; and special hazards when taken intravenously or in combination with other drugs. It is only when these factors indicate major hazard that the presence of psychological and physical dependence (which reinforce drug taking) take on significance. For example the high psychological dependence liability of tobacco would be of no concern, to the individual or to society, if it were not for the tissue damage produced by long exposure.

In table 1 is a list of the items considered of most concern for rating the hazard potential of a drug, shown separately for the individual and society, and the relative weighted hazard scores for each of the major categories.

For hazard to the individual, death was given a score of 100 points and seven physicians or scientists were asked to assign point scores to each of the other items to reflect their judgment on the hazard of each in relation to sudden acute death. The same was done for the items representing hazard to society. In this case violence was given 100 points and the other items were assigned points relative to it. The items representing hazard to the individual showed a range of variation of 20 points among the various raters; that for hazard to society, of as much as 50 points. The median scores for each item were then determined. Shown in table 1 are their relative adjusted values for a maximum total score of 122 points for individual and 116 points for social hazard when added.

Shown also are additional subcategory items of importance in rating these, and ratings on a 0 to ++++ scale of the hazard potential of food excess and 21 drugs representative of central nervous system (CNS) depressants, cannabinoids, psychedelics, opiates, stimulants and tobacco. In these ratings, 0 represents the absence of an effect or impairment; and ±, +, ++, +++ and ++++ varying intensities of effect from very slight to slight, moderate, marked and extreme respectively. The letter R denotes rapid development of the hazard and L, its occurrence with very low doses of drug (as with the occurrence of physical dependence with the opiates). By then assigning an appropriate fraction of the weighted hazard score shown to the 0 to ++++ hazard rating for each item, and totaling these, one can derive a total hazard potential score (expressed as a percent of the maximum possible score) for each drug under the conditions stated—maximum chronic abuse (shown at the bottom of the table), for the individual and society (I/S).

In my judgment, any drug with an I/S hazard score of about 35% to 40% or less would be of sufficiently low hazard potential to qualify for legalization—providing that it did not produce tissue damage, lead to a rapid loss of control, or produce significant physical dependence at low ("social") dose levels of use. Most interesting is the intermediate hazard score for heroin (48/47), considering present national concerns over its use. Even that score decreases to 6/6 (a level of considerable safety) as tolerance develops to its depressant effects. The same is true for methadone, and it is precisely for this reason that the methadone (or other narcotic) maintenance therapy for heroin addicts is feasible.

TABLE 1.—HAZARD POTENTIAL OF DRUGS WITH MAXIMUM CHRONIC ABUSE[1]

	Maximum hazard score		CNS depressants						Cannabinoids			Psychedelics[2]
			Alcohol									
	Individual	Social	Spirits 45 percent	Wine 12 percent	Beer 6 percent	Seconal	Valium	Librium	Δ ^{9}-THC	Smoked hashish	Smoked marihuana	LSD 25
Psychomotor impairment	14		++++	++++	++	++++	+++	++	+++	+++	++	+++
Memory			++	+	0	++	++	0	+++	+++	+++	0
Judgment		20	++++	++++	++	++++	+++	++	++++	++++	++	++
Vigilance		16	++++	++++	++	++++	+++	++	++++	++++	++	++++
Perception			+	+	0	+	0	0	++++	++++	+++	++++
Coordination	18		++++	++++	++	++++	++++	++	+	+	±	+
Psychotic reaction			±	±	0	±	0	0	+++	+++	+	++
Death	20		+++	++	±	++	0	0	0	0	0	0
Overdose			+	+	0	++	0	0	0	0	0	0
Drug withdrawal			+	+	0	+	0	0	0	0	0	0
Tissue damage			+++	++	±	0	0	0	0	0	0	0
Health:												
Tissue damage	16		+++	+++	+	0	0	0	0	±	0	0
Physical deterioration	12		++++	++++	+	++	+	±	++	++	+	+
Mental deterioration	14		++++	++++	+	++++	+++	+	+++	+++	++	+++
Flashback			0	0	0	0	0	0	±	±	±	+
Organic brain syndrome			++++	+++	0	+++	0	0	0	0	0	++
Psychosis			+	+	0	+	0	0	±	±	±	+
Social deterioration	10	11	++++	++++	++	++++	+++	++	+++	++	+	+++
Passivity		10	0	0	0	0	0	0	+++	++	+	++
Violence		25	+++	+++	++	+++	+++	+	0	0	0	0
Special hazards	8		++	++	+	+++	+++	±	++	++	+	+
Easy overdose			++++	+++	+	++++	+++	+	++++	++++	++	+++
I.V. route			0	0	0	+++	+++	0	0	0	0	0
Drug combinations			++	++	+	+++	+	±	+	+	+	0
Drug dependence:												
Psychologic	0–8		+++	+++	++	+++	+++	+	++	++	++	+
Rapid loss control	16	16	++	++	+	+++	++	+	++	++	++	+
Physical—severity	4		++++R	++++R	+R	++++	++++	+++	±	±	0	0
Total I/S score (percent)			81/79	77/79	27/42	65/83	42/69	21/37	40/55	39/50	25/29	31/41

	Maximum hazard score		Opiates [3]				Stimulants					Tobacco [4]		
	Individual	Social	Heroin	Methadon	Smoked opium (9 percent)	Codeine	Cocaine	Methamphetamine	Ritalin	Caffeine	Coffee	Cigarettes	Cigars	Food [4]
Psychomotor impairment	14		+	+	±	+	++	++	++	+	±	0	0	±
Memory			0	0	0	0	++	++	+	0	0	0	0	0
Judgment		20	+	+	±	+	++++	++++	+++	++	±	0	0	0
Vigilance		16	++++	++++	++++	++++	++	++	++	+	0	0	0	+
Perception			+	+	+	+	++	++	++	+	0	0	0	0
Coordination		18	+	+	±	+	0	0	0	0	0	0	0	0
Psychotic reaction			0	0	0	0	+	+	±	0	0	0	0	0
Death	20		+++	+++	+	++	+	±	0	0	0	++	±	+++
Overdose			+++	+++	+	++	+	±	0	0	0	0	0	±
Drug withdrawal			0	0	0	0	0	0	0	0	0	0	0	0
Tissue damage			0	0	0	0	0	±	0	0	0	++	±	+++
Health:														
Tissue damage	16		0	0	0	0	0	+	0	0	0	++	±	+++
Physical deterioration	12		+	+	±	+	+++	+++R	++	+	±	++	±	+++
Mental deterioration	14		0	0	0	0	++++	++++	++	++	+	0	0	+
Flashback			0	0	0	0	0	0	0	0	0	0	0	0
Organic brain syndrome			0	0	0	0	0	0	0	0	0	0	0	0
Psychosis			0	0	0	0	++++	++++R	++	±	0	0	0	0
Social deterioration	10	11	++	++	++	++	++++R	++++R	+++	++	+	±	0	+
Passivity		10	+++	+++	+++	+++	0	0	0	0	0	0	0	+
Violence		25	0	0	0	0	++++	++++	++	+	±	0	0	0
Special hazards	8		++++	++++	+	++	++++	++++	++	±	0	0	0	0
Easy overdose			++++	++++	++	+++	++	++	+	+	0	0	0	0
I.V. route			++++	++++	0	++	++++	++++	++	0	0	0	0	0
Drug combinations			++	++	+	++	+	+	+	±	0	0	0	0
Drug dependence:														
Psychologic	0–8		++++	+++	++++	++	++++	++++	+++	++	++	++++	+++	+++
Rapid loss control	16	16	++++	+++	+++	++	++++	++++	+++	++	±	+++	++	++
Physical—Severity	4		+++RL	+RL	++RL	+RL	+R	+R	+R	+R	±	+	±	±
Total I/S score (percent)			48/47	40/44	28/40	29/41	61/69	63/69	37/48	23/22	10/9	37/0	13/0	53/16

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[1] Scored on a 0 to ++++ scale of severity.
[2] Very low incidence of such chronic abuse.
[3] Impairment and danger diminishes with tolerance development (becomes safer).
[4] Tissue damage with prolonged abuse only.

Note: R=Rapid course of development; L=Occurs with lowest doses used.

In this analysis, one may note that the weighted hazard score for psychologic dependence varies from 0 to 8 points in accord with the actual hazard potential of the drug present, *e.g.*, 0 for drugs with total hazard scores below 20 points; 1 when between 20 and 34; 2 when between 35 and 49 (or lower when tissue damage is present); 4 when between 50 and 64; and 8 when 65 points or more. This adjustment was made because psychologic dependence alone, as noted, is not a problem; it becomes of significance and contributes to the problem only in proportion to the hazard potential of a drug. The social score for "rapid loss of control" is applied only for substances taken to psychotoxic dose levels of effect—not where tissue damage alone is the consequence (as with cigarettes).

It is inevitable that experts in the field will differ with me on some of the rating scores assigned, but I doubt that these will be great.

In table 2 the hazard scores per drug are arranged by drug class for easier comparison. As may be noted, not all drugs of the same class are equally dangerous. Within each chemical class are safer options for use. Some additional qualifiers for interpreting the data are needed, however. In the case of LSD-25, almost complete tolerance to its effects develops after three to four daily doses. This is a safety feature which temporarily reduces its hazard potential to zero. Also, tolerance development to the opiates results in a gradual reduction of the I/S hazard scores with use of 6/6 or less, *i.e.*, to a point of negligible hazard. One can contrast this with the greater hazard score (9/16) that one obtains even from the moderate, intermittent use of alcohol, as computed by me.

Table 3 shows a rank ordering of the drugs from highest to lowest hazard potential to the individual or society. These have been grouped into agents with very high, high, intermediate, low and very low hazard potential respectively under conditions of *maximum chronic abuse*. When taken in moderation, the hazard potential of virtually every drug is low and not a problem to the individual or society—except possibly with the psychedelics (which are commonly taken for a more pronounced effect). As may be seen in the table, alcohol and the barbiturates appear the most potentially hazardous of all the drugs, with the amphetamines, cocaine, food excess, the more potent cannabinoids and diazepam next. The opiates, methylphenidate among the stimulants, LSD-25, cigarettes, and 6% beer are of intermediate hazard; of low hazard potential are chlordiazepoxide, marijuana and caffeine. Of very low hazard are coffee and cigars. The scores for cigarettes (37/0) and food (53/16) need a qualifier, however, for they primarily reflect serious tissue damage which comes only with *prolonged* chronic abuse (these substances are much safer with short-term abuse). Conversely, agents such as LSD and the opiates become much safer with continuous abuse because of rapid and almost complete tolerance development to their effects.

Whenever taken *in excess*, the most socially and criminally dangerous drugs are clearly alcohol, the barbiturates, the amphetamines and cocaine. Alcohol and the barbiturates markedly impair judgment and coordination, and unmask surly or homicidal behavior; the amphetamines and cocaine increase paranoia and violence and can produce a paranoid schizophreniclike state. LSD and marijuana-like drugs can impair judgment and produce paranoia but are more prone to reduce violence than to increase it; the opiates or heroin are the least socially dangerous, they promote tranquility and decrease agressiveness. (The crime associated with heroin springs from its unavailability to the physically dependent person and did not exist prior to our drug laws. The cost of pure heroin obtained legally in England is slightly over two cents per tablet. An equal amount of impure heroin obtained illegally in the United States costs about $5.00.)

Alcohol accounts for about one-third of all deaths reported as suicide and 50% to 60% of all crimes of violence; about 20% of all people in state mental hospitals; over 50% of all automobile fatalities, injuries and accidents; about two million arrests for public drunkenness yearly and several hundred thousand arrests for driving while intoxicated (all at an estimated cost of alcoholism to the public annually of $15 billion).

Twelve billion nine hundred million dollars are spent annually on alcoholic beverages in the United States, not counting wines and beer, and another $8.4

billion on cigarettes and $5 billion on caffeine and coffee—a total of $25.3 billion annual expenditure on legally available physchoactive drugs. The total prescription market for drugs is $4.2 billion, of which only $435 million is for psychoactive drugs of potential abuse. Alcohol advertising alone costs $250 million annually and past tobacco advertising costs were $200 million annually for TV networks alone. Obviously, the non-medical use of drugs by the public is extremely prevalent. It is partially encouraged by advertisements in the media: TV, radio, magazines and newspapers. The removal of this reinforcement of drug using behavior can help reduce the drive in this direction which at present is being actively stimulated and promoted by advertising. I feel that the media might be better used to publicize realistic information on the relative hazard potential of the drugs available, encouraging preferential use of the safest among them.

The challenge of modern drug use is how to minimize the abuse of drugs, reduce their hazards to the user and society, and still not eliminate their constructive use. The majority of our society use drugs, and of these only a minority misuses and abuses them. Whether a person uses a drug constructively or destructively depends more on his personality and emotional state than on the drug itself. In all areas of public consumption, we attempt to develop safer products for consumer use except in the area of social drug use. Why not here also? Drug laws that shift the pattern of drug use and abuse from potentially safer drugs to alcohol only make the problem worse and increase the hazard for the user. The only way to reduce the hazards of drug abuse is to provide safer options for drug use where the hazards are less. Present approaches to curbing drug abuse actually deter the most innocent forms of drug use, leaving drug abuse almost untouched if not more prevalent.

A "safe" drug, in my judgment, would be one (1) with only moderate psychologic dependence liability; (2) for which tolerance and physical dependence development is minimal or absent; (3) where large increases in dosage are required to obtain substantial increases in biologic effect; (4) which does not produce tissue damage or significant mental or social deterioration; (5) which is unlikely to produce death from overdosage; (6) and which does not significantly impair judgment, coordination or increase aggressiveness in the doses commonly taken. Under these conditions, the user would be protected regardless of his reasons for taking the drug.

Based on these criteria, not all drugs of the same class are equally dangerous. As shown in table 2, safer options for use are available among all types of psychoactive drugs—the stimulants, depressants, narcotics, cannabinoids or psychedelics. A more rational approach to drug abuse control would be to outcompete the more dangerous drugs now in use (legal or illegal) with safer options. A requisite would be that they produce the effects sought without unusual hazard and are of such safety that even with abuse, the hazards would be significantly less. Physicians, in prescribing drugs for treatment, would better serve the public if they too selected for use the safer of the drugs of each drug type now available.

Generally, drugs are safer when taken orally or by smoking than when injected; easier to control for dose effects when smoked (for rapidly acting agents); and safer usually in organic plant form than as the pure active substance. For example obtaining cocaine by chewing the coca leaf is far less of a hazard than taking cocaine intravenously; the same is true for opium smoking versus morphine or heroin taken intravenously; or methamphetamine (speed) taken orally versus intravenously. The reason is not only because larger dose effects are achieved more quickly intravenously, but that new drug effects emerge from the intravenous route that may be regarded more pleasurable and more rapidly and predictably obtained. In consequence, the tendency for escalating dosage into drug abuse is greater by the intravenous than oral or inhalation routes. There also is greater danger with the use of a pure active chemical than the use of a natural plant product such as marijuana, opium or coca leaf where the active principals are present in more dilute form.

TABLE 2.—DRUGS IN ORDER OF DIMINISHING HAZARD (WITH MAXIMUM CHRONIC ABUSE)

Drugs	I/S[1]	Hazard
Alcohol:[2]		Very high.
Distilled spirits (45 percent)	81/79	
Wines (12 percent)	77/79	
Secobarbital	65/83	
Methamphetamine[2]	63/69	
Cocaine	61/69	
Food[2]	[3] 53/16	High.
Diazepam (valium)	42/69	
Δ9-THC	40/55	
Hashish	39/50	
Heroin	[4] 48/47	Intermediate.
Methylphenidate (ritalin)	37/48	
Methadone	[4] 40/44	
Cigarettes[2]	[3] 37/0	
LSD-25	[4] 31/41	
Codeine	[4] 29/41	
Opium	[4] 28/40	
Beer (6 percent)	27/42	
Chlordiazepoxide (librium)	21/37	Low.
Marihuana (1.2 percent)	25/29	
Caffeine	23/22	
Cigars[2]	[3] 13/0	Very low.
Coffee	10/9	

[1] Percent of maximum possible score (100 percent).
[2] Significant tissue damage.
[3] High individual hazard scores only with prolonged abuse.
[4] Much lower hazard with continuous use because of tolerance development (6/6).

TABLE 3.—INTRINSIC HAZARD POTENTIAL TO SOCIETY

[Relative percent ratio or rank]

Drug	Irwin (percent ratio)	Law enforcement personnel (percent rank)[1]	Federal law
Barbiturates	100	26	Illegal.
Alcohol	98	11	Legal.
Methamphetamine	86	85	Illegal.
Glue sniffing	72	34	Legal.
Heroin	58	100	Illegal.
LSD-25	51	56	Do.
Marihuana	36	16	Do.
Cigarettes	0	2	Legal.

[1] Based on a ranked order scale of hazard.

Most of the pills, capsules and powders prepared and sold illicitly are done so with little regard for human safety. Fraud in the illicit market is rampant, as is the lack of quality control over composition, dosage and potential toxicity of most of the drugs sold. In consequence, one assumes considerable risk ingesting or injecting illicit material. All too often the drugs are not what they are claimed to be, contain too high a dose for safe use, or are cut with chemicals intended to mimic a drug's action—chemicals which may be more dangerous than the drug purported to be in the pill. For instance, the "heroin" sold is cut with additives that have caused a very high incidence of sudden death following injection. It is claimed that about 25% of the quantity of barbiturate and amphetamine pills manufactured legitimately are siphoned off into the illicit market. If one is concerned about the public safety, one can be thankful for this—for these drugs at least are quality-controlled for composition, dosage and safety. A criminal law only forces users to obtain their drugs illegally without the protection of quality control, thereby serving to increase the hazard for the consumer.

Among the CNS depressants, a safer substitute for alcohol distilled spirits (90 proof) would be 6% beer or wine; an alternative but insufficiently safer substitute would be diazepam (Valium). Chlordiazepoxide (Librium), the safest of all I feel, is unlikely to produce effects deemed sufficiently acceptable for use. Development of an acceptable, safer CNS depressant is needed.

Among the cannabinoids, marijuana (1.2% THC content) alone fulfills the criteria of safety for public sale and use. Recent reports by The Canadian Government Commission of Inquiry into the Non-Medical Use of Drugs,[5] the National Commission on Marihuana and Drug Abuse[6] and the second annual report to Congress by the National Institute of Mental Health, entitled *Marihuana and Health*[7] note that marijuana does not eventually lead to heroin use; cause crime; or cause significant tolerance, physical or psychological dependence; and that with moderate use it is relatively safe to physical health and does not cause chronic psychoses.

The psychedelics possess too much potential hazard for public sale and use, but could be made available on a selected, supervised basis for those who would seek the experience until such time as a potentially safer agents becomes available. Among the opiates, the safest option would be opium (9% morphine content) smoked; it can produce physical dependence, but its hazard potential diminishes with continued use and the former can be easily managed medically. Accordingly, it seems an optimal treatment for the maintenance therapy of heroin addicts.

Methylphenidate (Ritalin) is significantly safer than the amphetamines, but insufficiently so for public sale and use. Caffeine has the level of safety needed for public sale and use (and is legally available), but insufficiently produces the quality of stimulation sought by the drug abuser.

A safer substitute for tobacco is needed—one that does not produce tissue damage with chronic use. For the present, greater safety can be realized from the preferential use of cigars and pipe tobacco, as these are less prone to be inhaled into the lungs.

DRUG ABUSE AND THE LAW

Until the turn of the century there were essentially no restrictions on the manufacture, sale and use of drugs by the public. One could freely buy any medicine, including narcotics, in the general store or pharmacy. Except for some incongruities, such as a mandatory death penalty for smoking tobacco in Turkey and Russia in the 17th century, severe punishment for coffee users in areas of 18-century Germany, and severe sanctions against the use of alcohol in Moslem countries, mankind had relatively free access to any drug of its choosing. In the United States, the first prohibition by the Government against free access and abuse of drugs, was the Harrison Act of 1914, which attempted to restrict the use of opiates and coca by the public. The second was the prohibition of alcohol in 1919, later reversed in 1933. The third, under the Revised Federal Food, Drug and Cosmetic Act of 1938, required a prescription from a licensed practitioner for the citizen to obtain drugs judged unsafe for lay use. More recent laws, including the Durham-Humphrey law of 1952, have aimed at further delimiting access to drugs by the lay public. This change from complete freedom of access to very stringent control took place in the short span of 57 years.

Before the federal drug laws, beginning with the Harrison Act, women outranked men about 2 to 1 in the use of opium or morphine containing substances.[8] Since these federal and state laws, male use has predominated. The women, generally more law abiding, simply switched to alcohol and a heavy use of barbiturates. Although the incidence of narcotic abuse in proportion to the population may be half today what it was before the federal laws, it is about the same for males today as it was then! From a purely medical and social hazard point of view, the change from opium smoking and morphine use to the use of alcohol and barbiturates was an unfortunate one.

ENFORCEMENT OF THE DRUG ABUSE LAWS

There seems no clearer instance in which punishment for the infraction of a law is more harmful than the crime, or of laws more detrimental to the needs of a society, than our present drug abuse control laws:

They label otherwise law-abiding citizens as criminals for possibly hurting no one but themselves.

They invade the rights of privacy.

They alienate many from society.

They promote widespread disrespect and flaunting of the laws.

Footnotes at end of article.

They undermine the Bill of Rights and promote such police-state practices as "no knock" search and seizure, informers and entrapment.

They create discrimination in the enforcement of the laws and marked variance in penalties assigned by judges.

They are used as an instrument for harassment of unpopular elements in society.

They create the possibility for an illicit drug market with high tax-free profits and encourage corruption of police and local officials.

They nurture and sustain organized crime.

They shape and encourage the most dangerous kinds of drug intake.

They increase the hazard for the user by eliminating quality control of the drugs for composition and safety.

They force addicts into larceny or prostitution to get their drugs.

They tie up the courts.

They slow the process of justice.

They distract the police from the problems of most critical concern—crimes of violence and against property.

They create a continuing need to increase expenditures to deal with the mounting problems created by the laws themselves.

They support a bureaucracy with a vested interest in maintaining the laws.

They create a great deal of personal tragedy and social waste, concealed in the word "processing" of drug offenders.

As noted in a recent article in *The Saturday Review*,[9] the most severe problems of crime and injustice stem directly from the nature of our laws and legal practices:

"The Presidential [Crime] Commission's choice of placing the blame for these problems on social imbalances became a way of absolving legislators and legal authorities from responsibility for their own failures to create and administer practicable and just laws and legal procedures. We do not absolve them. We hold them most culpable, collectively and personally for our most urgent problems of crime and injustice."

In the Comprehensive Drug Abuse Prevention and Control Act of 1970, being offered as a "model" law to the states, the basis for "scheduling" drugs bears no relationship to their actual hazard potential (*e.g.*, marijuana and heroin were listed together in Schedule I with the highest penalties), and no effort was made even to adhere to the criteria listed for scheduling the drugs. If there was, the amphetamines (since then corrected) and babiturates would have been classified in Schedule II instead of Schedule III. To demand, also, that a drug be in accepted medical use as a basis for scheduling and assigning penalties bears no relevance to the social use of drugs or their relative hazard potential. Penalties, to be effective should be assigned in proportion to the actual hazard potential of the drugs; our drug laws make no such distinction.

To quote the philosopher Baruch Spinoza (1632–1677):

"We always strive toward what is forbidden and desire the things we are not allowed to have. Men of leisure are never deficient in the ingenuity needed to enable them to outwit laws framed to regulate things which cannot be entirely forbidden. He who tries to determine everything by law will foment crime rather than lessen it."

Drug using behavior will not be abolished by legislative means. Present attempts at drug abuse control cannot succeed, regardless of the amount of money, energy, and resources our country is willing to expend. With the technology and skills available to illegal activities today, it is a physical impossibility for law enforcement personnel to significantly supress the supplies, use and abuse of illicit drugs.

Totally destroying marijuana supplies can only encourage the smuggling and distribution of synthetic marijuanalike substances, which would make matters worse, just as the prohibition of opium smoking encouraged the smuggling, distribution and use of heroin. Even if the supplies of heroin miraculously could be eliminated (present illicit U.S. market requirements for about 300,000 addicts are about 30 pounds per day), there are available for distribution and use synthetic drugs with similar narcotic properties that are 10,000 times more potent than heroin of which only 1 gram per day would be sufficient for the entire market! How utterly futile are our present efforts to reduce the cultivation of opium in Turkey, or any subsequent attempts to encourage this elsewhere. Operation Intercept, a successful attempt by the federal government in 1969 to cut off marijuana

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Footnotes at end of article.

supplies from Mexico, led to an upsurge in amphetamine use by youth with far more disastrous consequences, it was followed by an increase in heroin use (proving that marijuana, when available, significantly reduced the use of other, more dangerous drugs.)

Our national approach to drug abuse prevention and control, I feel, has been misconceived. It has not reduced the incidence of drug abuse, it deepens the problems associated with drug use and abuse, and produces many secondary problems far more dangerous and undermining to our country than when we had no drug laws. They also discriminate against a minority for behavior no more unprincipled, degrading or dangerous for the most part, than what the public now accepts from alcohol use.

INDIVIDUAL FREEDOM AND THE LAW

The thesis for individual freedom first stated by John Stuart Mill in his essay *On Liberty*, was that the criminal law should be reserved only for conduct which clearly causes harm to third persons or to society generally, and should not be used to prevent an adult individual from causing harm to himself. The inconvenience, he felt, was one that society could afford to bear for the sake of the greater good of human freedom.

An opposing position has been that the state has a paternalistic function, and has the responsibility to restrict the availability of harmful substances to the public where there is unusual hazard involved. In the *Interim Report of the Canadian Government Commission of Inquiry into the Non-Medical Use of Drugs*[10] it was noted that while they were in accord with a paternalistic role of government, the appropriateness or utility of such an application must be evaluated in the light of the relative costs and benefits. The state cannot "attempt to restrict the availability of any and all substances which may have a potential for harm. In many cases it must be satisfied with assuring adequate information [to the public]." They were not convinced of any necessary relationship between the offense of simple possession of drugs and trafficking, or of the necessity of such an offense in criminal law for effective law enforcement against trafficking. The commission further stated that "unless convinced otherwise, we will recommend total elimination of the offense of simple possession of all non-medical drug uses. Its impact on the individual must be reduced as much as possible . . . no one should be liable to imprisonment for simple possession." The commission recommended that the definition of trafficking be amended so as to exclude the giving, without exchange of value, by one user to another, of a quantity of drug which could reasonably be consumed on one occasion.

This same position against penalties for simple possession and use of psychoactive substances has been taken by the San Francisco Committee on Crime (1971), and for marijuana possesion by the American Bar Association Committee on Alcoholism and Drug Reform (1971) and American Bar Association Section of Criminal Law committees have concluded from the evidence that marijuana should be legalized and its sale regulated in accord with alcohol. The San Francisco Committee on Crime report stated in part "in a free society there ought always to be a presumption against illegalizing conduct until evidence is produced to warrant criminalization . . . if evidence would not warrant enactment of the law now, one cannot justify its retention. The demonstrable harm associated with marijuana does not justify the voracious demands on the resources of criminal justice made by the marijuana laws." Earlier, the National Commission on Reform of Federal Criminal Laws reported:

"the social cost of criminalizing a substantial segment of otherwise law abiding citizenry is not justified by the, as yet, undemonstrated harm of marihuana use; and that jail penalties for use of marihuana jeopardize the credibility and therefore the deterrent value of our drug laws with respect to other, demonstrably harmful drugs.[11] "

The San Francisco Committee on Crime in their July 1971 report listed seven principles to guide the appropriate application and use of the criminal law process:

1. A law cannot make criminal that which the public does not want made criminal.
2. Not all the ills or aberrancies of society are the concern of government; other institutions can handle them.

Footnotes at end of article.

3. Every person should be left free of coercion of criminal law unless his conduct impinges on others, or if it damages society.

4. When the government acts, it is not inevitably necessary that it do so by means of criminal processes.

5. Criminal law cannot lag far behind a strong sense of public outrage.

6. Society has an obligation to protect the young.

7. Even when conduct may properly be condemned as criminal under the first six principles, it may be that the energies and resources of criminal law enforcement are better spent by concentrating on more serious things. This is a matter of priorities.

What seems most lacking in the criminal law process is a failure to establish suitable standards of rationality, justice and validity as an a priori basis for acceptance of a law—it is not enough that it be constitutional. This failure profoundly affects those accused of drug offenses. The criteria for acceptance of a drug control law, or any law, I feel, should be as follows:

1. That a social problem of major concern exists.
2. That the provisions of the law deal effectively with that problem.
3. That the law is enforceable.
4. That punishment be commensurate with the seriousness of the offense.
5. That it does not discriminate against a minority or give special privilege.
6. That the sum total of its effects be sufficiently constructive to justify the cost of enforcement and restrictions on personal freedom.
7. That it does not create problems that outweigh its advantages or make matters worse.

The prohibition model upon which our drug laws are based provides no satisfactory alternative; it merely seeks to prevent people from doing or getting what they want. It thus comes into conflict with the realities of life, human needs, individual differences and personal desires for self-determination. It creates the potential for a profitable illicit market and encourages underground activity, the cultivation of evasive skills, alternative life styles and value systems, and an aggravation of what it seeks to prevent in an effort to surmount failure, controls are tightened and the consequences of failures are used to justify further inroads on personal freedom in the guise of "protecting" society. A vicious cycle thus is set in motion.

GUIDELINES FOR CHANGE

Short of abolishing or drastically revising our drug laws altogether, and unless unusual new hazards are found, I feel that the legalization of marijuana with regulation akin to wine and beer (which are more potentially dangerous) would do more to reduce the hazards and destructiveness of drug and alcohol abuse in America than any other single act. In addition, it would reduce involvement of our young people with illegal drugs and dealers, reduce violence and profits by organized crime, increase respect for the law, and improve the prospects for effective drug education. It seems a necessary first step in any strategy to ameliorate the problem. Enough is now known about the pharmacology and relative safety of marijuana to justify action. Even if combined with alcohol by some, that combination would be safer than the equivalent amount of alcohol taken alone. If the number of chronic drug users were to become equally divided between users of marijuana and of alcohol, that alone would be a great social gain. With marijuana legalized the young would no longer have to deal with a subculture of drug users where they become exposed to more dangerous drugs.

Under consideration by the National Commission on Marihuana and Drug Abuse, and the Canadian Government Commission of Inquiry into the Non-Medical Use of Drugs is an alternative approach which would decriminalize marijuana possession for personal use in limited amounts, but not to make it legally available. Purchasing small quantities for personal use, thus would not be a crime; nor would growing one's own supply for personal use. Only selling marijuana would be a crime. The value of this as an initial approach is that it no longer penalizes an individual for crimes without victims and acknowledges the known greater safety of marijuana relative to alcohol while not giving official endorsement of its sale until more complete research information on possible hazards becomes available. Also, in this way the social consequences of more widespread marijuana use could be discerned before the floodgates were opened, and politically more feasible and acceptable legislation than full legalization could be presented to the public at this time.

However, there is no rational basis in a free society for denying the public access to a substance with no established health hazard. It would still require young people to get their supplies from illegal sources with more dangerous drugs to sell, thus retaining the risks of such contacts.

It is my recommendation that all penalties for the possession of small quantities of any illegal drug for personal use be removed. It is cruel and unusual punishment to legislate otherwise law-abiding citizens into criminal status and to victimize them for so minor an offense as drug use. To jail them and deprive them of their rights dehumanizes them; and the burden of cost for imprisonment falls on the public, as does the burden of supporting that person's spouse and children during the period of imprisonment.

I further recommend that we reduce the penalties for illicit drug sales to a scale more in keeping with the crime, with increasing penalties in accord with the real hazard potential a drug, e.g., three months of drugs of 45% to 50% hazard, six months for those of 50% to 60%, and one year for those of 60% or more for the first offense (table 3). Also, that additional penalties be assigned for fraud, sale to minors, and the sale of junk drugs without quality control for composition and dosage. These latter, in my mind, are far more serious offenses than the sale of drugs per se.

Manufacturing quotas should be assigned to the manufacture of the most dangerous drugs of a drug type only, not to its less dangerous members that might be acceptable substitutes, for example, to the amphetamines but not to methylphenidate (Ritalin). The entry of safer drug options into the illicit market reduces the hazard. One can also reduce the hazard from Ritalin by removing the talc present in its tableted form, as this drug is now being injected intravenously on an illicit basis and the talc found to be deposited and accumulate on the retina of the eyes.

The Government, which has developed a vested interest in the promotion and sale of alcoholic beverages and cigarettes as a source of revenue, might better use taxation as an instrument to shape drug using behavior, and only secondarily as a source of revenue. To be effective it should be applied most heavily to the most dangerous drugs, e.g., wine and distilled spirits, and to a lesser degree or not at all to the safer options, e.g., beer and coffee, so that the preferential use of the latter would be encouraged. Since the heavy drug user and abuser also pays a disproportionate share of the taxes, is it not appropriate that a major portion of this revenue be used for the treatment of those who lose control and become addicts? In all fairness, should the taxes not be considered as a form of medical insurance against such a disability?

ATTAINABLE GOALS

By broadly defining drug use as the problem instead of concentrating our efforts on drug abuse prevention, we have met with failure. Drug use as a whole cannot and need not be eliminated through prohibition and the criminal process; such measures have only made the situation worse. As long as we adhere to this unattainable goal, the problem is insoluble.

The real problem is drug abuse, affecting about 10% of our population, and even there only with the abuse of drugs that are truly dangerous. It is better treated by noncriminal means that do not deprive or undermine the freedom of the remaining 90% who do not abuse drugs, and by being more responsive to the needs of those who do.

The pressure for drug abuse stems from peer pressures to conform and from societal and familial failures that promote frustration and diminish self-worth and esteem, e.g., an identity crisis, inept family communication, lack of neighborhood in one's living area as a support system, and a school system that too often blocks communication and effective one-to-one education. Reducing such pressure requires changing the situation that breeds and sustains it. It is the only important means by which drug abuse and other maladaptive or sociopathic behaviors can be significantly prevented. If we pile the weight of recrimination and criminal penalties on the drug abuser or addict, as we have been doing, it only handicaps him further and solves nothing. Such measures are an exercise in problem-sustaining and augmenting, not problem-solving.

There is no ideal solution, no solution that will satisfy all the persons concerned—only a best solution that one might rationally and realistically achieve. With modern drug use we have two main concerns: how to minimize the abuse of drugs and how to reduce their hazards to the user and society. There will always be drug abusers and there will always be drugs available for them to abuse; it matters not how many. But I believe that we can greatly minimize and reduce the drug problem and virtually eliminate the secondary problems that have emerged from our handling of it until now, if we define soluble goals.

Here are the goals that I feel can be achieved:

Reduce:

1. The incidence of drug abuse and addiction.
2. The hazards from drug abuse or addiction.
3. The crime and violence associated with drug abuse and addiction.
4. The consumer market for illicit drugs.
5. The hazards for the illicit drug user.
6. The requirements for police enforcement.

Minimize:

7. The bureaucary associated with drug abuse control.
8. The invasion of privacy and restriction of freedom imposed by efforts at drug abuse control.
9. The association of youth and the public with dealers in illicit drugs.
10. The use of the more dangerous drugs.

Increase:

11. Opportunities for the treatment, maintenance or rehabilitation of drug abusers and addicts.
12. The possibility for informed decision-making by those who seek to use drugs.

SPECIFIC RECOMMENDATIONS

Criminal Law:

Drug use can be "successfully" prohibited and controlled only where safer, acceptable substitutes are allowed to be sold.

There should be no restrictions on public access to drugs of 20% or less hazard, as with coffee, tea or antihistaminics.

There should be an age restriction (18 and under) on public access to drugs of 21% to 40% hazard only—those that do not produce tissue damage, rapid loss of control or significant physical dependence, such as codeine, marijuana (1.2% delta-9-THC content), chlordiazepoxide or caffeine. Their distribution and sale should be no more regulated than wine or beer, which possess greater hazard.

For the psychedelic drugs such as LSD or mescaline (33/44 hazard) where particular hazards exist, special centers should be established at which trained personnel can safely guide adults through the unique LSD experience—to minimize the hazard and maximize any potential gains from it.

All other drugs of 41% to 80% or more hazard (and drugs with lower scores that produce tissue damage or significant physical dependence at "social" dose levels of use) should be prohibited from public access without a doctor's prescription, except where they are a safer substitute for dangerous drugs now legally available, as with alcohol and cigarettes.

The sale of cigarettes and distilled spirts should be prohibited when the public is prepared to permit this—allowing the public sale only of cigars, pipe tobacco, weak (4%) wines and beer as safer substitutes.

Penalties for the illicit sale of the prohibited drugs should increase with their hazard potential, to favor preferential sale of the least hazardous drugs and those quality-controlled for composition, dosage and safety—independent of whether or not the drugs are in medical use.

There should be no penalties for the possession of small quantities of prohibited drugs for personal use or for passing them on to others where there is no profit involved.

There should be no restriction on access to small quantities of the more dangerous drugs for research. Present restrictions serve primarily to deter and inhibit research and do not significantly deter illicit distribution.

The pharmaceutical industry should be encouraged to develop safer drug options for all drug types in use. New drug types should be allowed only if greater, not equal safety can be demonstrated for the agent.

Quotas should be assigned only to the manufacture of the most dangerous drugs in a given class (*e.g.*, the amphetamines among the stimulants), limiting their production to amounts that meet medical needs only, thereby allowing the safest quality-controlled agents to preferentially diffuse into the illicit market.

All advertising of psychoactive drugs should be prohibited. Drug education should point out the safest options for use.

The Drug Abuser

Develop facilities as needed for the detoxification and withdrawal of addicts from their drugs, on a voluntary basis. This will reduce the hazard for the abuser and offer him a greater degree of control over his addiction (and rehabilitative assistance should he seek it).

A drug addict should have a right to his addiction, as well as a right to be prosecuted for any criminal acts for which he is responsible—whether or not under the influence of a drug.

Every effort should be made to help the compulsive drug abuser deal with the life problems and conflicts that have led him to the abuse of drugs, *i.e.*, to help him function in a less self-destructive manner.

Persistent alcohol or barbiturate addicts should be encouraged to use marijuana or, at present, a drug such as diazepam (Valium) as a safer substitute. Chlordiazepoxide (Librium) would be a still safer option but it is unlikely to be considered an acceptable substitute. Where the alcohol abuser is also a repeat traffic offender, he ultimately should be forced to submit to antiabuse treatment as protection for the public.

Heroin addicts should have a choice of access to heroin or methadone and to take it intravenously if they wish. They should be encouraged to smoke opium instead as a safer option. Narcotic antagonists such as cyclazocine or naloxone can be made available to those addicts that wish to withdraw from the use of all narcotics and who seek this additional means for controlling their behavior. The narcotic antagonists also might be successfully used with juveniles who have become addicted to narcotics and have lost control, as part of an overall attempt to enable them to rehabilitate and better cope and deal with their life problems.

The amphetamines are too impairing and too prone to produce paranoia and violence to be made available for intravenous use. "Mainline" amphetamine addicts should be encouraged to use a safer option such as heroin or a safer stimulant drug, such as Ritalin (see table 2).

Research

Research should focus on establishing the hazard potential of drugs with more consideration than at present of their use and abuse under social conditions.

Continuing research should be maintained on the pattern and consequences of drug use by the public, particularly with any new drugs made available, to establish the presence of any unusual hazards not foreseen.

Rigorous standards and adequate field testing for safety must precede the widespread public sale of any new drug.

Research must also concentrate on the mechanisms of tolerance to and the development of physical dependence on drugs, on new treatment modalities for the drug abuser or addict, and on antagonists of the drugs in use (to deal with problems of overdose or control).

More research must be undertaken on the effects and potential hazards of drugs when taken in combination.

Close watch should be kept on the extent of illicit drug sales and the use of prohibited dangerous substances, with adequate testing of these for composition, dosage and safety (for public information).

Research should assess the extent to which legal drugs modify individual functioning, attitudes and goals, with an eye toward their total societal impact and their special dangers when taken by adolescents.

Information and Education

There can be no substitute for honest education about drugs, presenting the whole truth as it is known regarding a drug's "positive" effects as well as potential hazards.

Drug education should include guidelines to the safe and constructive use of drugs by those who elect to use them, and information on the special problems that can arise from misuse or abuse.

Education of the young should focus on their special problems of self-esteem and identity, and on why involvement with drugs at their particular age (especially as a substitute for problem-solving) can be detrimental to them, seriously impair their development, and lead to loss of control.

Education should include analysis of the special problems of drug abuse and addiction for the individual and society, and of the impact on society of one's own decisions affecting the use and sale of the more dangerous drugs.

Education of the young also should deal with the ethical problem of purchasing the more dangerous prohibited drugs, and of the role they might play in prevention of drug abuse by not tolerating sales of the more dangerous substances to their peer group.

The media should be used to educate the public and to disseminate information on any special hazards with illicitly sold drugs, not to contribute to the problem by over-emphasis, distortion or scare tactics.

The widespread availability to the public of safer drugs of all types could greatly diminish the illicit traffic in drugs and the necessity, as at present, to deal with and support a criminal drug subculture. It would also enable the drug abuser and addict to obtain a legal, safer option for his drug of addiction if he chooses, at greatly lowered cost. Alternatively, he could obtain his drug of addiction by prescription from a physician, who could then supervise his health status, minimize the hazards from drug use, and encourage treatment or rehabilitation. This would eliminate the need for present-day heroin addicts to engage in criminal activity to support their addiction, and eliminate the need for young people to deal with criminal elements or a drug-using subculture to obtain the safer drugs they usually seek (however illegal). For those wishing the more dangerous, prohibited drugs, an illicit market would continue to flourish, but surely a less profitable and far less extensive one than we now have. Using a rational system for the prohibition of drugs based on actual hazard, those engaged in illicit sale of the more dangerous drugs would be less tolerated than today and more likely to be reported to the police.

Admittedly, even with the safer drugs sold legally, the drug abuser could still abuse drugs—but he would have to work harder to get the effect desired and the hazards to the individual and society would be less. The net result would be fewer persons willing to expend the effort needed to purchase illicit drugs at greater cost—drugs that are not quality controlled for composition and safety. Thus even the drug abuser woud be better protected.

ALTERNATIVES TO DRUG USE

A discussion of the problems of drug abuse would not be complete without the admission that drugs have positive uses—for recreation, for a unique experience, to enhance performance, to produce a change to some desired state, for controlling feelings of anger or distress, or as an alternative to suicide. If drug abusers did not gain in some way, they would not chance the adverse reactions, possible addiction, the suffering of withdrawal and the possible need for large sums of money to support a habit. But drugs are not the only means available for producing an altered state of being or of consciousness, to make one feel good, or to escape from distress.

To prevent drug abuse, education in our schools must provide children and their parents (through special classes, counseling and educational programs) with the skills and techniques needed to increase perceptual awareness; to communicate and relate more effectively alone and in groups; to solve interpersonal problems; to relax, enjoy and heighten or "make something" of the ordinary day-to-day activities of living that engage us for a lifetime; and to control feelings of anger, depression or anxiety. If this was done, there would be a greater tendency to use drugs as tools for new learning and experiences or for recreation than as agents for escape or self-destruction. To engender greater optimism, also, education at home and in the schools should teach the value of adversity and suffering. Unpleasant as they are, the crises in our lives force us to discover new ways to cope with how we feel, and to explore and create alternative solutions and ways of responding or doing things. In the process, the important growth takes place and a greater sense of identity, esteem and strength usually emerges from meeting the challenge.

With such enlightened education, the individual would be more certain to learn how to function and cope effectively, and thereby to grow in self-realization and actualization. Without it, as at present, he seems more prone to escape through drugs or social withdrawal, thus preventing this possibility for personal growth and transcendence.

Under controlled conditions, I think it evident that certain drugs such as marijuana and LSD can be important tools in learning what it is humanly possible to achieve in awareness, relationships and spiritual growth. But once this has been discovered and its value understood, the real work of personal development begins: learning to go it alone without drugs to achieve that which is possible in no other way—the gradual unfolding, emergence, self-actualization and fulfillment of the individual and his capacity to enjoy life and living.

THE RATIONAL APPROACH

Drug use is no problem to the individual or society; only drug abuse is the problem. Alcohol when abused is the most dangerous of all the social drugs in use, second to none (including heroin); it is our most pressing and serious drug abuse problem, dwarfing all others. My recommendations for dealing with the drug issue will not eliminate the problem of drug abuse and drug addiction, but they can reduce and ameliorate their most harmful consequences to the young, the abuser and to society in general. There is no escaping the fact that we are already a nation of drug users and will continue to be so. Drug use is not a moral issue and we should not respond to it as one. It should be dealt with in a pragmatic, realistic and rational way—not with our emotions.

Recommended are three main approaches to drug abuse prevention or amelioration:

Legislative: Provide and encourage the use by the public of safer drug options, to be sold without restriction, save for quality control over composition, dosage and safety and an age limit on use; encourage the preferential use of these agents by a system of escalation taxes on the agents now in use in accord with their actual hazard potential; assign production quotas to the manufacture of the most dangerous prescription drugs used, but not to the safer alternatives that might find their way into the illicit market; assign escalating penalties for the illicit sale of drugs in accord with their actual hazard potential to favor sale of the least hazardous drugs; and eliminate all penalties for the mere possession of "dangerous drugs" in small quantities for personal use.

Educational: Basic education, now mainly confined to academic subjects, should be enlarged to include the teaching of skills and techniques needed for problem-solving and meaningful communications, for dealing more effectively with crisis situations and for controlling feelings of anxiety, depression or anger—as an alternative to drug use and possible loss of control. Adult education in schools, community service organizations and church study groups should provide the same opportunity.

Institutional-Social: Work toward transforming our society into one that provides a meaningful role for young people and the aged, and one that recognizes the needs and potential of such marginal persons as the mentally retarded and mentally ill. And eliminate those features in our communities, schools or institutions of welfare that are most destructive to the individual—causing alienation, impairment of self-esteem, creating problems and blocking personal growth.

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APPENDIX 2

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AMPHETAMINES: A DANGEROUS ILLUSION

(By George R. Edison, M.D., Salt Lake City, Utah)

Amphetamines are among the most dangerous of currently abused psychoactive drugs. They cause dependence, behavioral toxicity, and physical damage. Despite their extensive medical use, the evidence suggests they are ineffective or minimally effective in most of the conditions for which they are prescribed. Their widespread use in medical practice is more likely the result of the euphoria and the dependence they induce than of any significant clinical results. This paradox, presented by the legality of amphetamine use, compounds the difficulty of treating youthful drug abusers and educating potential abusers. The following recommendations are urged: prescription of these drugs should, with few exceptions, cease; and production should be sharply curtailed and probably be limited to one or two pharmaceutical companies.

The rapidly increasing abuse of amphetamines among the young makes it important to revaluate the status of this group of agents in medical practice. Are they valuable drugs, and in what conditions? What results can be expected from their use? What is their mode of action? To what extent are they indispensable? What are their hazards? How often do these hazards occur? Does their medical use have any influence on their illegal use? This article briefly reviews evidence suggesting that the amphetamines are both ineffective and unsafe, offers speculations about why we continue to use them, and recommends changes in the way we use them.

HISTORY

Amphetamine, a close relative of epinephrine, ephedrine, and other sympathomimetic amines, was synthesized in 1927. Shortly thereafter, descriptions of its effects on blood pressure and nasal congestion began to appear. Within 5 years it was found to act as a bronchodilator and a respiratory stimulant and also to have remarkable effects on the central nervous system, specifically cerebral stimulation and reduction in appetite. Because of these central effects, several authors warned of the possibility of dependence and tolerance as early as 1937. These warnings are well reviewed by Connell (1).

Despite the warnings, the amphetamines and their uses have proliferated to an amazing degree. The list of "accepted" medical indications for their use now includes obesity, mild depressive reactions, epilepsy, parkinsonism, central nervous system depression caused by barbiturates and other sedative-hypnotics, narcolepsy, and hyperkinetic reactions of children. They have also been used widely to maintain alertness and to increase physical performance.

The 1970 edition of the *Physicians' Desk Reference* (2) lists 65 amphetamine and amphetamine-like preparations produced by 40 companies. These are available either as single-drug preparations or in combination with salicylates, barbiturates, tranquilizers, and other substances. One can obtain a choice of vitamins or hormones along with an amphetamine in 15 preparations from 14 companies. This listing does not, of course, exhaust the preparations available from pharmaceutical companies.

In four cases companies describe in the *Physicians' Desk Reference* the amphetamine they produce and only one other product. In four other cases the amphetamine is the company's sole listed product.

What amount of amphetamines is legally manufactured? No one knows exactly. Estimates range from 5 billion to 8 billion doses a year. The Food and Drug Administration estimated, for example, that over 100,000 lb. were available in the United States in 1962—enough to supply each man, woman and child with 250 mg (3). About one half of this supply is thought to be diverted into illegal channels. (4).

EFFECTIVENESS OF AMPHETAMINES

While production has flourished, the list of indications has gradually withered, for three reasons: [1] For such conditions as parkinsonism, epilepsy, and depressive reactions newer kinds of treatment have simply proved more effective; [2] for severe central nervous system depression from drug intoxication it is now accepted that no drug is as effective as other treatment such as artificial ventilation; support of the circulation, and hemodialysis (5); [3] for obesity control, now the commonest reason for use, it has slowly become obvious that although appetite-suppressants may have some temporary utility, they are ineffective in long-term treatment.

Narcolepsy and hyperkinetic reaction of children remain the two conditions for which amphetamines are still said to have effect. For narcolepsy, however, methylphenidate is "the present drug of first choice," according to the *Cecil-Loeb Textbook of Medicine* (6); for hyperkinetic reactions preliminary evidence suggests that if any drug is indicated, imipramine may be more effective than amphetamines (7), so that even here good alternatives may be available.

The two commonest reasons for prescribing amphetamines are depression and obesity, and it is for these conditions that we must examine most carefully the evidence for amphetamine effectiveness.

NONEFFECTIVENESS IN MILD DEPRESSIVE REACTIONS

Depressive reactions include a variety of syndromes with a wide range of severity and a strong natural tendency toward spontaneous remission. Their very diversity makes evaluation of any treatment extraordinarily difficult. Yet common to many depressed persons are conflicts around oral-dependent needs, which suggests that drugs such as alcohol, barbiturates, and amphetamines be used with caution because of their ability to produce dependence. Indeed, depression is the underlying mood in many, if not most, high-dose amphetamine abusers or "speed freaks" (8).

But many doctors ask if amphetamines, although theoretically dangerous, are nonetheless a useful and practical measure for treating mild depressions. Tradition grants them a position of sorts in the treatment of mild cases, although recommendations for their use are becoming increasingly rare (for example, the 1968 edition of *Noyes' Modern Clinical Psychiatry* ignores them). Occasionally one finds a favorable mention, as in Mendelson's article (9) in Freedman and Kaplan's textbook of psychiatry: The amphetamines are often useful and sometimes gratifyingly efficacious in lifting the spirits in a mild depression. When antidepressive medication is resorted to, the amphetamines should probably be tried before prescribing the newer antidepressive drugs.

Virtually no authority, however, supports their use far more than an immediate euphoriant lift, and most believe that they have no place at all in the treatment of depression. According to Jarvik, in Goodman and Gilman's text. (10), no well-controlled long-term study has been able to demonstrate their effectiveness: The sympathomimetic amines, such as amphetamine and phenmetrazine, and similarly acting central nervous system stimulants, such as methylphenidate and pipradrol, were tried in the treatment of depression and found wanting except in certain mild cases, in which a drug-induced acute euphoric state would suffice. . . .

The report of an AMA committee states(3): Published studies have indicated that, in general, dextroamphetamine is only slightly more effective than a placebo in ameliorating depressive symptoms.

Cole and Davis (11), also writing in Freedman and Kaplan's textbook, review the evidence thus: Amphetamine was found to be less effective than placebo in the treatment of depressed outpatients by British general practitioners. . . . In still another British study, amphetamine also proved less effective than phenelzine, and no better than placebo, in the treatment of depression. In a Veterans' Administration study, dextroamphetamine was no more effective than placebo in treating hospitalized depressed patients.

In a recent review of the pharmacologic treatment of depressions Schildkraut (12) states: The psychomotor stimulants (for example, amphetamine, methamphetamine and methylphenidate) cause mood elevation, increased alertness and enhanced performance in normal subjects. These drugs may alleviate some of the symptoms of depression in certain depressed patients, but such beneficial effects are often transient and may be accompanied by a number of unwanted side-effects. . . . It is fairly generally agreed that the psychomotor stimulants have relatively little to offer in the treatment of major depressive disorders.

NONEFFECTIVENESS IN CONTROLLING OBESITY

Obesity is usually regarded as a complex, long-term problem with major social and psychological determinants. Frequently recognized psychological factors are chronic tension and depression, unusually strong oral dependent needs, inability to tolerate frustration, and substitution of food for other forms of gratification. These psychological characteristics may lead to dependence on many kinds of drugs as well as on food. As in the case of depressive reactions, it may be illogical to include in the treatment of such a condition drugs that have a strong potential for causing dependence. "In fact, the use of amphetamine-type drugs is contraindicated for alcoholic persons and other dependence-prone persons" (3).

Short-Term Effect.—It is granted by most that amphetamines can induce a period of appetite suppression and increased weight loss for a few weeks. Whether this is of lasting value is questionable, however, since in most cases obesity continues to be a problem over a period of years. Very few short-term gains in treatment of obesity have been translated into long-term successes. More importantly, it is likely that short-term effectiveness is caused more by a stimulant effect than by any direct effect on the appetite control center of the brain. Thorn and Bondy (13), in their textbook article, state: As a result of stimulation, or a "lift," the patient's drive toward overeating may be significantly modified and as far as he is concerned, the over-all effect of the drug is "appetite-depressing." Obviously, drugs which create such a state of euphoria may lead to habituation in certain individuals.

Modell (14) pointed out in his 1960 report: Central stimulation, not a specific central depressant effect on appetite, is then the common mechanism through which these drugs act; it is clear, therefore, why undesirable central stimulant effects, which have constituted their chief clinical limitation, have thus far appeared to be indivisible from anorexigenic action.

In other words, obese patients may use the drugs in the same way the "speed freak" does—to obtain a "high."

There is also some doubt whether amphetamines are effective in the short term. Again from Modell's report (14): The amphetamines present special problems in the evaluation of their effectiveness. Patients often promptly recognize the drug by one or another of the central stimulant effects (usually the "lift"). Thus, they can distinguish between drug and placebo when these are used in what theoretically appears to be a well-designed clinical evaluation with a double-blind control. In patients with emotional disturbances particularly, who include most compulsive overeaters, the ability to distinguish medication from placebo by any effect other than the one under examination (in this case weight loss) makes it exceedingly difficult to prevent bias and psychological factors from shaping the apparent effects of the drug.

Long-Term Effect.—Thorn and Bondy (13) evaluate pharmacological treatment of obesity as follows: Depression of appetite by a pharmacologic agent can facilitate weight loss, although it is apparent that as soon as the pharmacologic effect wears off, or the medication is discontinued, appetite will return and weight gain will recur unless the patient's inherent capacity to control his food intake has been altered fundamentally. *That the pharmacologic agent used for* *these purposes be devoid of serious toxic side effects is axiomatic* [emphasis added].

Unfortunately there is no pharmacologic agent available at this time which acts primarily by depressing the "appetite center."

In her textbook article Albrink (15) devotes 3,600 words to the treatment of obesity. This is her discussion of amphetamines: Drugs. Appetite-suppressant drugs of the amphetamine group are effective for only a few weeks. Dependence on their stimulatory effect occasionally makes withdrawal a problem. Such drugs have no demonstrated role in the long-term management of obesity.

Reinforcing this opinion is the report of the AMA Committee on Alcoholism and Addiction and Council on Mental Health (3): In long-term (more than a few weeks) programs of weight reduction, the superiority of these substances to placebo has not been demonstrated.

In 1959 Stunkard and McLaren-Hume (16) reviewed the literature on the treatment of obesity. Their summary states: A review of the literature on outpatient treatment for obesity reveals that the ambiguity of reported results has obscured the relative ineffectiveness of such treatment. When the per cent of patients losing 20 and 40 pounds is used as a criterion of success, the reports of the last thirty years show remarkably similar results. Although the subjets of these reports are grossly overweight person, only 25% were able to lose as much as 20 pounds and only 5% lost 40 pounds.

In 1966 Glennon (17) reported a follow-up: Review of the literature since 1958 did not reveal a successful long-term study using a diet regimen by itself or in combination with drugs, psychologic treatment, or an exercise program.

Astwood (18) is even more negative in his evaluation of all methods of treatment, including the pharmacologic: All of us know that we can't get fat people to become slim by suggesting a diet, so we conclude, for the time being at least, that obesity is incurable.

Modell (14) reemphasizes the point in the summary of his report: New and logical pharmacotherapy for persons who overeat will more likely come with understanding of the processes involved than through the current practice of developing more variations on old themes which have already been well exploited and have not satisfied the need. There is really nothing new on the scene. There are no "anorexiants" to fit specific disturbances in eating patterns, and there are no useful depressants of the appetite center, wherever it may be. . . . Current pharmacotherapy for persons who overeat has limited use. Insofar as drugs are concerned, at the very best, their potential is secondary to the elimination of the cause of the hyperphagia. Drugs which give assistance along the lines now available provide short-lived symptomatic relief only.

Despite 30 years of extensive use, then, the place of amphetamines in clinical practice is far from established. They represent the treatment of choice for only a small number of those patients for whom they are prescribed. Their effectiveness in treating obesity and depressive reactions is minimal and controversial.

Interestingly, the pharmaceutical industry tells us indirectly that the amphetamines and related drugs offer only a low order of effectiveness by constantly introducing new congeners and combinations. For example, in the 1970 *Physicians' Desk Reference* eight companies have listed nine "new" amphetamine products not listed in the 1968 edition. The industry sends the same message in another more encouraging way; within the last 2 years four companies have voluntarily discontinued their production of amphetamines (Methedrine®, Burroughs Wellcome; Phetobese®, Cole; T.V.D. Formula®, Lambda; Ad-Nil®, Medics).

HAZARDS OF AMPHETAMINES

The irony of the amphetamine situation is that whereas we have been slow to admit the negligible utility of these agents, we have also been slow to recognize their dangers. Their illegal and casual use as stimulants of the central nervous system has grown tremendously. They have become perhaps the most serious drug of abuse in the United States (as in several other countries), except in the large cities, where heroin addiction is widespread. Most physicians are not yet sufficiently familiar with these hazards, which are well documented elsewhere (1, 3, 8, 19-22). Briefly, they fall into all three major areas of concern in psychoactive drugs.

1. Amphetamines are associated with *tolerance* and with an intense *psychological dependence*, which makes it difficult to withdraw from the drug without

help. High-dose use may begin in a pattern of illegal experimentation, but it may also begin with a physician's well-intended prescription. The nature of the drug's effects leads easily to progressively increasing dosage in susceptible persons. Prediction of "susceptibles" cannot be made with confidence, but patients for whom amphetamines are prescribed are probably, by the very nature of their illnesses, among those most likely to increase the dose and become dependent. Then begins a prolonged struggle to discontinue drug use, an effort usually attended by intense lethargy and depressive symptoms. The period of depression during the withdrawal (or "crash") is frequently associated with suicidal feelings and actions. The absence of physical dependence in amphetamine abuse may give the impression that it is easier to withdraw from than heroin. This has not generally been the case: in fact, the reverse may be true, although data on this point are lacking.

2. The *behavioral toxicity* of high doses is usually such that the user cannot maintain work, school, or family relationships. With high doses of typical psychosis often develops, characterized by hyperactivity, distortions of reality, impaired judgment, paranoid ideation, and hallucinations. Despite this disturbance, the senesorium is clear, and the individual may appear superficially normal (19).

3. The *physical toxic effects* on the autonomic nervous system and cardiovascular system include sympathetic gastrointestinal and urinary symptoms, occasional systolic and diastolic hypertension, sometimes cardiac arrhythmias (8, 21), and possible necrotizing angiitis (22). In addition, malnutrion, hepatitis, and other serious infections are associated with the intravenous use of these drugs.

These are the major toxic manifestations of illegal, high-dose amphetamine use. But damage also results from the less spectacular adverse reactions to small, legally prescribed amounts and may cause disability for greater numbers of people. These case examples are familiar to most practicing physicians:

Case 1.—A 23-year-old male first-year medical student asked his physician for stimulants to help him overcome classroom drownsiness, difficulty in studying, and mild depression. He did not have narcolepsy. Dextroamphetamine, 5 mg. daily, was prescribed. He was asked to return but did not. When next seen, he had flunked out of school. Although not the sole factor in this patient's failure, the amphetamine obviously did not help his studying and may have been a critical deteriment in his avoiding early, appropriate counseling.

Case 2.—To control her appetitte a 47-year-old woman had used various amphetamines almost daily for 10 years. Despite this, she was grossly obese. She realized that she had continued to take the medication largely to avoid lethargy and to get through each day. She was now attempting to withdraw but was finding herself depressed, gaining weigh, unable to mobilize enough energy to keep her house clean, fighting with her husband, and blaming herself for all her children's personal problems because she had worked while they were growing up. Her use of amphetamines had allowed her to manage her personal and family problems in ways she no longer considered appropriate and had provided a comfortable alternative to counseling (which she had tried unsuccessfully). With the children grown, menopause reached, and husband alienated, she was now decompensating without the drug.

Case 3.—A 20-year-old female student was well-adjusted but occasionally depressed in the face of religious conflicts between strict parents and a more relaxed financé. With marriage and a job 6 months away, she felt the need to lose some weight even though she was not obese. She approached her physician for diet pills. He reluctantly prescribed 30 Desbutal Gradumet® tablets, each containing 10 mg of methamphetamine hydrochloride and 60 mg sodium pentobarbital. She lost 7 lb in the next 30 days. She also engaged in first coitus during this period, experiencing deep guilt. After finishing the prescribed amount she felt lethargic and depressed. Four days after taking the last tablet she had fights with her financé and her sister, became very upset and depressed, and impulsively ingested 30 tablets of a sedative-analgesic (Fiorinal®), each containing 50 mg of an intermediate-acting barbiturate (butalbital). She was hospitalized moderately intoxicated, and recovered. For this girl the combination of major emotional conflicts and the depression caused by amphetamine withdrawal led to a suicide attempt.

It is important to recognize that these patients were giving their physicians a common message: they needed help with an emotional problem. The physician's response to the overt request for a pill prevented him from providing help for the real problem.

WHY ARE AMPHETAMINES STILL BEING PRESCRIBED?

Why are drugs of such dangerous potential and so little objective advantage still in wide use? Amphetamines are, after all, not life-saving agents. Several explanations are possible:

1. Most physicians have not had an opportunity to observe a seriously affected high-dose amphetamine abuser or "speed freak."
2. Most physicians feel a need to offer something to the patient trying to lose weight, both physician and patient often sensing, but not verbalizing, that they are dealing with a problem nearly untreatable in traditional terms.
3. The economic value of amphetamine sales is substantial, judging from the industry's enthusiastic promotion of these agents despite the serious questions about their utility.
4. Tens of thousands of respectable adults are to some extent dependent on them and exert suasion on their physicians to continue prescribing them.
5. Physicians themselves use and abuse psychoactive drugs more often than the general population (23). This suggests that sometimes they may also have difficulty objectively evaluating the use of these drugs for their patients.
6. It is possible that amphetamine popularity reflects American culture. As Fiddle (24) has observed, the amphetamine user is a caricature of many widely admired American traits: intense activity, efficiency, persistence and drive, and the desire to excel, to break records, and to move with ever greater speed. These are admirable behavoir patterns that are not easily relinquished, even when a drug may be required to achieve them.

The result is the perpetuation of the legal use of dangerous agents of little therapeutic advantage. This is not the first description of the hazards or of the minimal effectiveness of these drugs, nor is it the first effort to suggest that their medical use be curtailed (25-27). But the problem grows.

To some extent the current drug-abuse epidemic may relate to the way we as physicians have handled the amphetamine problem. Our use of the drug may be providing a poor model for children and adolescents to emulate. By treating with drugs a condition such as obesity, which probably most often has its roots in social custom and psychological conflict, are we giving license by example to youngsters who would treat their own social and psychological discomforts pharmacologically?

The time to face the unpleasant facts is long overdue. Amphetamines are fascinating substances with a wide range of effects—some good, some bad. Their use represents a sincere effort to treat major causes of human suffering. At present, however, we are not in a position to handle them safely. The situation raises uncomfortable questions: If amphetamine use of all types—legal and illegal—were to cease completely tomorrow, would we be better or worse off with regard to health than we are today? Do we really need these drugs?

We must begin taking steps now to end the epidemic overuse and misuse of amphetamines. Few of us would welcome more restrictive legislation in the drug field or more extensive activity by the Food and Drug Administration. Yet this is the prospect if we avoid taking immediate remedial action.

This action should begin with the physician's voluntary cessation or sharp reduction of prescriptions for amphetamines and their congeners. Exception might be granted in individual cases for the treatment of narcolepsy and hyperkinetic reactions of children but rarely in other conditions. It is difficult, if not impossible, to justify their continued use in obesity and depression. Physicians may need a buffer against pressures for continued prescriptions from some patients. If so, a medical committee or board could be established to authorize these exceptions, as in Sweden (28). To circumvent the weariness most of us feel toward more committee work and the suspicion that an endless list of drugs may later come under such scrutiny, let me suggest that it is no more than we would do if heroin were made legal. Amphetamines are no less a menace.

Severe curtailment of production is essential. Less than 1% of the current volume would probably be an adequate supply for the exceptional case. No more than two pharmaceutical houses are needed to provide this amount. The industry's voluntary action toward this goal would provide refreshing evidence that it puts the public welfare first and that legislation is not required on every urgent health matter. Finally, advertising of these products in medical journals is inappropriate.

We need not delude ourselves that these measures will end amphetamine abuse: they will not. It is not certain they will even reduce it measurably for several years. Black-market production will doubtlessly expand. The diagnosis of narcolepsy may suddenly become more popular. These measures are, however, a step in the direction of removing one major inconsistency in our approach to drugs and of establishing a climate that does not so vigorously promote drug abuse.

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Appendix 3

Speed Kills—The Amphetamine Abuse Problem

(By the staff of the Amphetamine Research Project, Department of Pharmacology of the University of California Medical Center, San Francisco, published by American Social Health Association, August 1969)

FOREWORD

This pamphlet was prepared by the staff of the Amphetamine Research Project, a National Institute of Mental Health sponsored program being conducted in San Francisco by the Department of Pharmacology of the University of California Medical Center, San Francisco. The project, working in close cooperation with the Haight-Ashbury Medical Clinic, has had contact with hundreds of individuals using a variety of amphetamine drugs. In almost every instance, staff members have been struck by patients' lack of information about the amphetamines and the possible consequences of extended use. Non-users and even former users are often uninformed.

The phamphlet is divided into two parts. While both parts derive from the same source, they are edited for separate audiences. The first part was written for junior and senior high school students and the second was prepared for parents, teachers, physicians and others concerned with youth.

John Luce, public information director of the Haight-Ashbury Medical Clinic, drafted the text under the supervision of Roger Smith, project director of the Amphetamine Research Project. Other contributing authors include:

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Speed Kills

A DECLARATION

> "Let's issue a general declaration to all the underground community, contra speedamos ex cathedra. Speed is antisocial, paranoid making, it's a drag, bad for your body, bad for your mind, generally speaking, in the long run uncreative."
>
> —ALLAN GINSBERG

(In an interview with The Electric Newspaper of Salt Lake City, Utah)

As poet Allan Ginsberg suggests, among those who use drugs like marijuana, LSD, and other drugs that have come to be associated with "turning on," one drug recognized even by them as a real problem and a definite "bummer" is "speed," a common designation for the amphetamine family of drugs. This family of drugs is a "drag" for many reasons. One of the reasons is that the people who use it are unable to remain cool about speed. It's well known in drug circles that only "speed freaks" can stand other speed freaks—and even then, not for too long.

Yet, many people use speed, and many of their friends or former friends wonder if they know what they're doing, what they're getting themselves into, and what happens to people who shoot speed for any length of time.

In a recent survey of a San Francisco Bay Area high school, some students said, "I wouldn't touch that garbage if you paid me! I would rather die than try speed or any other drug." But others wanted to know what speed was all about. Some were just curious and asked, "Is it really that dangerous, more dangerous than pot and LSD?"

When young people were asked how to inform others about speed, a 17-year-old boy user said: "Some organization should find scientific facts about all drugs used today and distribute them throughout the country and city in mailboxes or doors."

He believed his suggestion should be used to let unknowing people in on "what it's all about." This is what the following text does with respect to the amphetamine family of drugs, including speed.

People of all ages and from many walks of life have become involved with these drugs, and their high abuse potential constitutes an alarming medical and social problem. This pamphlet replaces myth and folklore with the most valid information available. It distinguishes between amphetamines used under medical supervision and those substances sold as speed on the black market. It describes the physical and psychological effects of these drugs and some of the possible consequences of their abuse.

WHAT IS SPEED?

Speed is a street name for any number of substances that produce the same central effect as pharmaceutical amphetamines.

The name Speer derives from the drugs' fast stimulative action on the central nervous system. The name can be extended to cover any chemical compound that produces an euphoric "high" when taken. (Speed is used in this pamphlet to cover substances described in this paragraph, as well as the intravenous use of amphetamines and amphetamine-like agents.) Today, the word is used to describe many drugs that bring a person "up," through stimulation of the central nervous system, just as "downer" is applied to barbiturates and other depressants. The vagueness of these words stems from their prevalance on the black market, where hearsay and slang are often substituted for scientific precision.

In the black market or underground vocabulary, speed is also called "splash," "crank," "rhythm," "meth," or "crystal," the latter term applying particularly to the powdered form of methamphetamine hydrochloride.

HOW SPEED IS MANUFACTURED?

Speed generally finds its way to the black market in two ways. It may be pharmaceutical methamphetamine hydrochloride, dextroamphetamine sulfate, phenmetrazine or another stimulant obtained from a forged doctor's prescription or acquired through robbery of a drugstore or pharmaceutical company. Very often however, it is a facsimile produced by persons with the requisite knowledge of chemistry.

These underground chemists, often called "cooks," may affix counterfeit labels or stamp trade names on the products they sell in bulk or tablet form. They sometimes say that the drugs are legitimate pharmaceutical products or insist they are of comparative purity, but buyers have no way of determining either their quality or origin.

Street speed is often found to contain either, which is added to the liquid speed to hasten the crystallization process, or mixed with other impurities. What is advertised as "U.S.P." (official standard) methamphetamine hydrochloride by some illegal chemists may turn out to be methamphetamine sulfate, baking powder, monosodium glutamate (e.g., Accent), or, in one reported case, insecticide.

HOW SPEED IS ABUSED?

Sometimes, speed is used in a quasimedical fashion by individuals who are depressed, fatigued, or overly sedated by barbiturates, opiates or other "downers." However, speed is more often abused. It is generally taken in large doses to produce a characteristic high. Some persons take speed once or twice for "kicks," and then abandon the drug; others continue abusing it over longer periods.

Users interviewed by the Amphetamine Research Project and the Haight-Ashbury Medical Clinic indicated their long-term abuse was motivated by a desire for euphoria, escape from tensions and suppression of psychic difficulties and physical needs. A few of their observations are:

"My boy friend got messed up with speed—and his best friend went to the state mental hospital for it," said one 17-year-old girl.

A 16-year-old girl defended her use of speed: "Oral speed is good for fat girls—and makes working easier," she said.

One mini-skirter reported: "For me, personally, it helped to get along with other people and not be so tensed up. But when you stop speed—man, you get nerves."

From a girl cheerleader: "The advantages of losing weight—of having a good mood while up—of pleasing physical conditions—none of these is worth the breakdown of general physical health. Mentally, you don't function well; the more you use speed, the worse the condition becomes."

An 18-year-old boy remarked: "I use speed orally. It provides insight on your problems. But not an escape. Excessive use is psychologically bad if a person is trying to block something within himself."

One speed user described his trips up and down: "I make lots of plans, but I don't ever carry any of them out. I get in this megalomaniac bag, about five days into it, and I'dd build these mountainous castles in my mind, all the far out things I'm going to do, and all the money I'm going to make. I'll be driving a Rolls Royce and have two speed labs going at once, a heroin refining plant, my own private two-engine airplane. I'll be running the Mafia, and then when I start to come down I realize that none of this stuff is existing and that none of it is going to exist and it's like you pull the bottom out of your brain. I feel empty and suicidal in about four or five hours."

WHAT IS THE SPEED HIGH?

Persons who inject speed in high doses usually experience a pleasurable "rush" or "flash" as the drug reaches their central nervous system. They remain high for several hours. The high is characterized by feelings of self-confidence and mastery, and by greatly increased motor and psychic activity. Persons in this state often "rap" or talk rapidly and may become agitated or violent. They are likely to do or say things not expected by others or themselves.

The high is usually followed by a reaction phase or depression when the effects of the drug wear off. The depression may be so acute that users "shoot" more speed to get high again. Many repeat this cycle until they launch into speed "runs" lasting as long as seven or eight days. During this time they rarely sleep or eat. As their bodies develop tolerance for the drug, they use increasingly higher doses at more frequent intervals. By the end of a run, they may be injecting several hundred milligrams of speed 10 or more times a day. The Haight-Ashbury Medical Clinic has reported cases in which 15,000 milligrams per day were injected.

HOW ARE ADVERSE REACTIONS TREATED?

Persons with acute anxiety reactions should be treated in a supportive environment. Anti-anxiety agents such as chlorpromazine can be applied effectively, but physicians are advised against aggravating the situation by threatening attiudes, and over-medicating patients with sedatives. The anxiety reaction is often followed by depression.

The paranoid-schizophenic reactions are much more difficult to treat. After prolonged usage, abusers experience auditory and visual hallucinations; they may become convinced of elaborate plots directed against them. They can become violent and require restraint; often they must be hospitalized. Physicians should administer anti-psychotic agents, such as phenothiazines, and isolate patients in supportive environments. Such isolation is necessary because of the phenomenon of group toxicity associated with speed. Studies conducted on laboratory rats at the University of California Medical Center indicated that grouping the animals and injecting them with amphetamines increases the toxicity of the drug four times. Significantly, it lowers their lethal dose effects.

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[1] See also: Carey, James T. & Mandel, Jerry. A San Francisco Bay Area Speed Scene, *Journal of Health and Social Behavior*, 9 (2), 164–174, June 1968. Kramer, John C. Fischman, Vitezslav S., & Littlefield, Don C. Amphetamine Abuse. Pattern and Effects of High Doses Taken Intravenously, *Journal of American Medical Association*, 201 (5), 305–309, July 31, 1967.

Persons who take speed in group settings show a marked increase in their psychic responses and are much more likely to become violent than when they take the drug by themselves.[2]

WHAT ARE THE PHYSICAL EFFECTS?

The risk of these many forms of psychic distress from speed is directly proportionate to the frequency and size of doses involved. So is the risk of serious physical damage.

Since speed masks the true physical state, abuses may overexert themselves and fail to recognize the bodily harm incurred. Not eating, they become undernourished, and consequently more vulnerable to disease.

Habitual speed abusers rarely observe proper dental hygiene or nutritional standards. Tooth decay and gum infections may develop. Abscesses of cellulitis often occur because of using contaminated needles, missing the vein when injecting the drug, or using speed which contains impurities. Blown or ruptured veins are common among persons who use poor quality substances which do not completely dissolve in water and may be difficult to force through a needle. Their lips become cracked due to the drugs' constricting effect on mucosal surfaces. They often injure their facial tissue by picking at "crank bugs," imaginary black bugs which seem to be crawling under the skin. But there are no bugs. It's a hallucination. This reaction is common among intravenous speed abusers.

The destructive liver disease known as serum hepatitis is not a specific accompaniment of amphetamine abuse, but is a risk incurred by any drug abuser using the intravenous route. Although many persons recover from heptatitis infection, there remains the possibility of severe complications and the development of acute or chronic liver damage.

HOW IS HEPATITIS RECOGNIZED AND TREATED?

The principal symptoms of hepatitis are nausea, vomiting, loss of appetite and stomach pains with cramps. In less severe cases, weakness and a tired feeling may be the only symptoms. If the liver is damaged sufficiently, it can no longer remove toxic substances from the bloodstream and a material called bilirubin may back up in the system, giving a yellow color to the skin and eyes. In more severe cases of hepatitis, the whites of the eyes and the skin may become jaundiced; the urine becomes dark brown, and the tools turn gray.

When these symptoms are evident, one should seek medical aid immediately. Patients usually require hospitalization during the acute phase, when they require bed rest, cannot eat, and must be nourished by intravenous fluids. Other cases can be treated on an out-patient basis, but should be followed in order to determine any complications that may arise.

Serum hepatitis ordinarily is transmitted only by penetration of the skin by a needle or by an object that has been in contact with a carrier of the virus. Serum hepatitis has a long carrier state; persons may remain carriers for five years—in some cases, for life. The symptoms of serum hepatitis usually manifest themselves from two to five months after the virus enters the body.

Serum hepatitis spread by unclean needles is very prevalent among speed abusers. Many persons living in a high abuse population, such as that in San Francisco's Haight-Ashbury district, have had the disease. Physicians working at the Haight-Ashbury Medical Clinic see severe forms of liver disease in that community. They believe that high doses of speed may produce an additional toxic effect in those persons whose liver is already damaged by hepatitis.

If you think you have hepatitis, see a doctor or go to a clinic or hospital. Plenty of bed rest will be prescribed because inactivity lowers the amount of stress placed on the liver. A high protein, high carbohydrate diet will be advocated, consisting of meat, fish, eggs, bread, potatoes.

If you think you have hepatitis, do not:

1. Donate blood.
2. Share a needle with anyone else.
3. Drink alcohol.

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[2] Smith, David E. Behavorial Mediators in the Polyphasic Mortality of Aggregate Amphetamine Toxicity, *Journal of Psychedelic* Drugs, Haight-Ashbury Medical Clinic, San Francisco, November 1968.

4. Use heroin, morphine or other opiates which are particularly toxic to the diseased liver.

To avoid serum hepatitis: Don't share needles. If you suspect that you are infected, a shot of gamma globulin from your doctor or clinic will modify and reduce the severity of your possible case of hepatitis.

Infectious Hepatitis is a separate viral disease spread in unhygienic surroundings by contaminated water, food or eating utensils.

WHAT ARE THE PSYCHOLOGICAL EFFECTS OF SPEED?

Some people say that speed acts as an aphrodisiac. Others report that it impairs sexual potency. Usually there is a slackening of sexual interest in speed abusers. As their abuse steps up, their interest in members of the opposite sex often decreases proportionately.

Their interest in social relationships and intellectual or physical pursuits of any kind also declines proportionately to their involvement with speed. Habituated persons usually live solitary lives distinguished only by alternating cycles of depression and euphoria. It is difficult to tell whether speed abuse leads to, or reinforces an already-existing readiness for, such behavior.

WHO ABUSES SPEED?

Most speed abusers are immature. They try to make up for the limitations of their lives by chemical means. Many become involved with speed when they are about 16 years old, an age when adolescents are likely to be facing up to the challenges of maturity. Many suffer from personality disturbances so severe they try to block out reality and its commitments and decisions.

Most of the young people interviewed by the Amphetamine Research Project came from emotionally inconsistent backgrounds, fatherless homes in which the mothers were often depressed and resented supporting their unwanted children. At an early age, many of these potential speed abusers found it difficult to tolerate the "down" atmosphere of their homes and sought any kind of activity, however aimless and compulsive, to get "up" again. Their early lives were barren of affection. They were almost literally starved and needed to fill themselves up in any way they could. They felt great emptiness, overwhelming oral longings. They also felt cheated by the world and wanted others to help them get their "due."

Many speed abusers resemble abusers of other substances in being unable to tolerate frustration. Feeling themselves cheated, they expect immediate gratification for their desires. Speed can make them think they are supermen who can do or have anything they want. The speed flash, which many abusers compare to a sexual orgasm, often becomes a substitute for sexual gratification with another human being. Speed abusers do not have to risk being refused sexual relations with others. Even if they do have intercourse, it is usually just a form of mutual masturbation, with little shared tenderness or love.

After the flash, speed abusers float on fantasies of conquest, totally divorced from the reality of their actual lives. They feel none of the depression and anxiety that usually overwhelm them. When they start coming down from the drug, they must shoot up again to ward off despair.

High dose speed abusers often brag about how much of the drug they can take in a single injection. Sometimes, they compete with one another to see who can sustain the longest speed runs. Such activity constitutes a form of status in some areas. It is possible that many speed abusers are psychotics who require such competition and danger. The drug helps them to project their inner confusion into the external world and create chaos in their daily lives in order to feel they are actually mastering their confusion.

Whatever psychic needs speed satisfies, its abuse has become increasingly widespread in this country over the past several years. Many persons who once abused marijuana, narcotics, and cocaine have switched to speed. A sizeable number of long-time narcotics addicts must be counted in the national speed abuser population. More and more persons are varying their consumption of speed with barbiturates and other downers in a cyclical pattern.

Many school students without previous drug experience are becoming involved with speed and pharmaceutical amphetamines. A recent survey conducted at a suburban high school in the San Francisco Bay Area revealed that 22 per cent of the 11th and 12th graders had used one or more of these drugs orally one or more times. Three-fourths of the 22 per cent had taken these substances three or more times. Since oral use generally pre-dates intravenous abuse, it is safe to conclude that a number of these students may eventually become habituated to speed.

Although the specific experiences of the speed freak vary, depending on the person and the area in which he lives, all tend to have certain things in common. They are eventually likely to be excluded from such normal activities as jobs, school, family life, meaningful friendships or love relationships. Speed is a total "ego trip," and the speed freak has little time for anything or anybody other than his love affair with speed.

RESEARCH IS URGENTLY NEEDED

Recognizing the alarming spread of speed and amphetamine abuse in America today, young people, as well as their physicians, teachers, counselors, public officials, parents and law enforcement agencies should familiarize themselves with the patterns of abuse of these substances. More research is urgently needed to determine the social and psychological factors prompting the spread of drug abuse. Treatment facilities must be established to deal with these drug problems.

At the same time, persons curious about speed and amphetamines and wishing to experience their effects should seriously consider the probable psychic and physical danger from such experimentation.

"Speed Kills" is neither an idle threat nor an unsubstantiated warning. Indiscriminate use of these drugs can only lead to harm.

THE AMPHETAMINE ABUSE PROBLEM—WHAT ARE AMPHETAMINES?

Amphetamines are related chemically and pharmacologically to a large group of compounds, generally known as sympathomimetic amines, that act like adrenaline on the body. They have a pronounced stimulating effect on the central nervous system, as well as certain peripheral effects, and are classified under the broad category of central nervous system stimulants.

Amphetamine equivalents have the same approximate pharmacological properties. They are often erroneously called amphetamines, although they may or may not be properly classified as sympathomimetic amines.

Amphetamines are prepared for pharmaceutical purposes in many forms, the most common of which are amphetamine sulfate, dextroamphetamine sulfate, and methamphetamine hydrochloride. They are manufactured by several large pharmaceutical companies and marketed under such brand names as Benzedrine (amphetamine sulfate), Dexedrine (dextroamphetamine sulfate), and Methedrine and Desoxyn (methamphetamine hydrochloride). Methedrine, a term often used synonymously with amphetamine, is a brand name for one particular form of an amphetamine (methamphetamine hydrochloride).

The combination of methamphetamine hydrochloride and the barbiturate, phenobarbital sodium, is marketed under the brand name Desbutal. A combination of dextroamphetamine sulfate and the barbiturate amobarbital is marketed under the brand name Dexamyl. Two amphetamine equivalents, phenmetrazine and methylphenidate hydrochloride, are marketed under the brand names Preludin and Ritalin. These drugs are usually sold in tablet form on a prescription basis.

HOW ARE THEY USED?

The peripheral effects of amphetamines include an increase in blood pressure as a result of a step-up in heart rate and vascular tone; dilation of the pupils; relaxation of the smooth muscle of the gastrointestinal tract and urinary bladder; and secretion of sparse, thick saliva.[1]

The drugs also have a constricting effect on blood vessels when applied to such surfaces as the lining of the nose and the bronchial passages. Because of this effect, amphetamine inhalers were once used to treat fever, but widespread abuse of the inhalers led to their withdrawal from the market.

Today, amphetamines are employed therapeutically for their profound stimulative effect on the central nervous system rather than for their peripheral action. The most marked and consistent effect is the production of a state of arousal and wakefulness which may be accompanied by a feeling of increased psychic and motor activity. It is much more often a feeling than a measurable increase. This effect is used medically in the treatment of narcolepsy, a disease characterized by an uncontrollable desire to sleep.

Amphetamines are also used occasionally for the improvement of performance and endurance. Doctors have been known to prescribe amphetamine sulfate or dextroamphetamine sulfate, for example, to students wishing to stay awake while studying for examinations or to truck drivers who must travel long distances late at night. When used as prescribed, these drugs are usually taken orally in 5 to 15 milligram doses once every eight hours. They have a high abuse potential, however, and many physicians now prescribe other stimulants or recommend the caffeine available in coffee or various over-the-counter products.

Another prominent central effect of amphetamines is the inhibition of appetite. This effect is the basis of the drugs' most common medical use, the treatment of obesity. Doctors may prescribe methamphetamine hydrochloride in tablet form for weight control and advise that it be taken in single 5 to 15 milligram doses daily. Methamphetamine ampules were once prescribed for the same purposes. Informed physicians now rarely resort to the amphetamines for weight reduction because their side effects are disadvantageous, and their abuse potential high.

The central stimulative effects of amphetamines are usually perceived subjectively as a sense of increased energy and self-confidence, and of faster thought and decision making. Users of the drugs often experience feelings of well-being and even euphoria. These effects are employed in the psychiatric treatment of some forms of depression.

HOW ARE AMPHETAMINES ABUSED?

Drugs are considered to be misused and abused when their persistent or sporadic use is excessive, inconsistent with, or unrelated to acceptable medical practice. Such use interferes with the physical, psychological and social well-being of an individual. With amphetamines, such abuse stems from the drugs' stimulative and psychic effects and is complicated by the fact that as the body develops a tolerance to the amphetamines, higher doses are required to maintain the drugs' effect.

Amphetamine abuse may evolve from therapeutic use. Some housewives who initially try amphetamines to hold down their weight become psychologically dependent on the drug to lift up their spirits. As their bodies develop a tolerance, they increase their doses and/or frequency of ingestion. Eventually, they may become dependent upon the drug and abuse it in a cyclical fashion, alternating between psychic depression and chemically-induced euphoria.

College students and truck drivers can become dependent in a similar manner. They may originally take amphetamine sulfate or dextroamphetamine sulfate to stay awake for a single night and then employ these drugs to deny their need for sleep over a longer period of time. Some also try to deny their need for nourishment or mask their true physical condition. Others employ amphetamines to suppress their anxieties as well as their appetites, and become abusers in a cyclical pattern.

Abuse of amphetamines can lead to erratic behavior and serious mental disturbance. Prolonged high dose consumption usually causes auditory and visual hallucinations and severely impairs judgment. Medical records reveal cases of truck drivers, for example, who have swerved off highways to avoid imaginary obstacles in their baths.

Going the same route, students have reported similar states of confusion or overconfidence, induced by amphetamines, that actually impair their performances on tests. Some have taken high doses of amphetamines to help study and discovered, during the examination, they have forgotten all they have learned. One young man who stayed awake for several days with dextroamphetamine sulfate wrote a long and largely incoherent book in response to a simple examination question.

High dose amphetamine consumption can also produce toxic psychoses and precipitate or aggravate chronic neurotic and psychotic behavior. Housewives who use amphetamines occasionally for intoxication may become disoriented and

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[1] Kalant, Oriana. *The Amphetamines, Toxicity and Addiction*, Charles C. Thomas, Publisher, Springfield, Ill., 1966, 151.

require hospitalization. Others who take the drugs compulsively over extended time periods can become severely disturbed. There is a greater prevalence and severity of psychotoxic effects when the amphetamines are taken intravenously.

DOES ABUSE LEAD TO PERSONALITY CHANGE?

Some physicians believe that extended abuse can lead to pronounced personality change. Persons who become dependent upon amphetamines usually exhibit increased restlessness and irritability and often become aggressive and violent. When not stimulated by the drugs, they can become withdrawn, depressed and even suicidal.

Others have argued that such persons are predisposed to such behavior patterns and that amphetamine consumption only reinforces already existing personality defects. Although little research has been conducted to determine whether amphetamine abuse causes or reinforces personality change, it can be stated that most abusers do have certain personality traits in common. Those housewives who abuse the drugs are often passive, unhappy persons. They employ the drugs to deal with their personal problems or to make up for deficiencies in their personalities. Students who become dependent on amphetamines are usually withdrawn individuals who do poorly in their studies and cannot tolerate the tensions of a highly competitive academic atmosphere.

The possibility of personality change from abuse of amphetamines is alarming. More tragic is the possibility that excessive amphetamine consumption can lead to permanent organic damage to the brain. Studies of methamphetamine hydrochloride abusers in Japan and animal studies conducted in this country suggest that irreversible brain damage can be caused by the drugs, and research is now under way to explore the likelihood of this effect.[3]

Because of these dangers, amphetamines should be prescribed only under the strictest medical supervision. In fact, many doctors urge that amphetamines should be removed from the commercial market and replaced by other stimulants with comparable therapeutic effects and significantly lower abuse potential.

Their position is supported by physicians familiar with widespread abuse of amphetamines and amphetamine equivalents in other countries. The rise in methamphetamine hydrochloride abuse in Japan since the Second World War and the recent wave of phenmetrazine abuse in Sweden have convinced many doctors that amphetamine abuse is a most serious international, as well as American, problem.

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[3] Lemere, Frederick. The Danger of Amphetamine Dependency, *American Journal of Psychiatry*, 123 (5), 569–572, November 1966.

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APPENDIX 4

Senator BAYH. I will ask our next witness, John, to come forward and sit in the left-hand chair.

And, Mark, will you sit in the second one?

And, Clyde, who does not want to be photographed, if you could, turn your chair and look to the wall.

Would that make it possible for us to respect your wishes?

Mr. ANDREWS. Yes.

STATEMENT OF JOHN PATEROS, MARK WILLIAMS, AND CLYDE ANDREWS (ASSUMED NAME), A PANEL COMPOSED OF FORMER AMPHETAMINE ABUSERS[1]

Senator BAYH. Gentlemen, the ball is in your court, so to speak, so why don't you proceed with your testimony and your thoughts on the subject that we are discussing?

Mr. PATEROS. My name is John Pateros, and I am 27 years old. I have been drug-free the last 9 months, and I am a resident of Rap House in the District. Before that, I lived in Montgomery County, Md. I have spent 4 years heavily involved in drugs, especially in amphetamines. I am deeply concerned about the epidemic of drug abuse, and I am grateful for the opportunity to come before this subcommittee and share with you my experiences of both being addicted and trying to lead a drug-free life.

Senator BAYH. Thank you. You can make whatever opening statements you would like to make, and then I will ask some questions. I imagine Senator Eagleton will also have some questions.

Mr. WILLIAMS. My name is Mark Williams, and I am currently working with an Arlington County drug abuse program. I spent about a year in a psychiatric hospital after about 4 years of steady drug use. My experience with amphetamines is somewhat limited, but I have friends and other acquaintances who have used them, so I know a little about what is going on with them.

Senator BAYH. Clyde?

Mr. ANDREWS. My name is Clyde Andrews, and I am 19 years old. I am a university student. My experience is with amphetamines, all occurring during my freshman year of college. I originally used them as strictly a study guide, when I would have to write a paper or something and stay up all night. I have also used crystal methadrene. I have not injected it. I took it; I snorted it, and I have used, at other times, speed, and speed is when it has been used as a base for LSD of mescaline. I have not used speed for probably 6 months. I do not intend to use it again.

Senator BAYH. Could you tell us how old the three of you were when you started using the various drugs?

Mr. PATEROS. Well, I was 22 when I started. This was out in California. I grew up here in Montgomery County, but I went out to California after I graduated from high school. I was in the real estate business for a while, and then I started working for IBM as a salesman. I got into the drug culture sort of accidentally. It was rather romantic to see sort of the other side of life, because all I was dealing with was street people like myself and businessmen.

I started out with using marijuana and LSD, and then I got interested in amphetamines. I noticed that I was a lot more alert and awake at my job and, being a salesman, this is a tremendous advantage. So, I was able to think faster, and so on. So, then, I started using the illicit street amphetamine which came in a crystalline form, and this was taken by snorting it, putting it in your nose and sort of inhaling. Then, another way it is used is to dissolve it in water and shoot it or inject intravenously, but I was not doing that at the time.

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[1] Hearings before the Senate Subcommittee to Investigate Juvenile Delinquency on "Amphetamine Legislation—1971," July 15, 1971, pp. 129–40.

Senator Bayh. You sniffed it up your nose?

Mr. Pateros. Right. It is called snorting.

Senator Bayh. Have you shot it in your veins?

Mr. Pateros. Yes, I have; but it was later when I actually got into shooting it. What happened was that I got interested in amphetamines, so I went to the library and looked in the Physicians' Dest Lessons, the PDR, and found out the symptoms of amphetamines were prescribed for. One was narcolepsy. So, I went in to a doctor with those symptoms, and I got a prescription for dexedrine.

I started taking it heavily then, because I had a relatively cheap supply. I started abusing it at that time, taking it excessively.

After a while, I got a little crazy, which happens with amphetamines after prolonged use. You lose touch with normal reality.

Senator Bayh. While you are going through this, could you give us an idea of what sort of high, what sort of stimulus there is, when you sniff it or you shoot it?

Mr. Pateros. Yes. Well, it is the same thing as when you drop it, or you know, take it by mouth—even more so.

Senator Bayh. Maybe you could tell us about that, too.

Mr. Pateros. Right. OK. And at this time was a regular, ethical drug, you know, from a doctor, all legitimate. There was nothing illegal about what I was doing. I was dropping them. What would happen is that I would get a tremendous feeling, a tremendous feeling of alertness and awarenes, and a go-get-them-tiger type of feeling, a sense of confidence. That was another big thing. You feel that no matter what happens you will be able to deal with it, you will be able to handle it. I guess this is because of the extra awareness. You see a lot of possibilities that you do not ordinarily see.

Senator Bayh. Are these real possibilities or imagined possibilities?

Mr. Pateros. Both; both.

Senator Bayh. Did you have the ability to distinguish one from another?

Mr. Pateros. No. Not at that time. Only later can you go back and see what was realistic and what was not. I was a salesman, and seeing a possibility is a valuable tool for a salesman. I was involved with what I got from speed. That is, how it could help me to do my job—and selling is a creative thing and it requires a lot of thinking and plotting and scheming, if you will, and the drug enhances this ability.

Anyway, there is a line that you cross, and I crossed it. I began to get crazy in subtle ways.

Senator Bayh. Pardon me. Is this still while you were dropping?

Mr. Pateros. While I was dropping.

Senator Bayh. You mean, orally?

Mr. Pateros. Right. I was taking around 40 or 50 milligrams a day after about a month which is about four or five times the normal weight control dosage.

Senator Bayh. Forty or 50 milligrams?

How many tablets is that?

Mr. Pateros. Well, that would be four or five 10-milligram tablets, or eight or 10 5-milligram tablets. I started out with the 5-milligram tablets and when I got my next prescription it went to 10 because I informed him of my higher dosages that I was taking, and he approved it and said it was all right, because as far as he was concerned I was narcoleptic.

So, what happened was that I got caught up in my thinking and scheming and planning, and I enjoyed doing that, especially with the added ability I thought I had for it. So, I told my boss at IBM, that I did not want to be a salesman anymore and have to deal with running around and servicing accounts, and so on. I thought I just wanted to think for a living, and that they should give me a job where I could think for a living, because that is what I thought I ought to be doing.

My boss suggested that I see a doctor, and the doctor suggested that I see a psychiatrist, and the psychiatrist said, "Yes, you need help." So, they put me on sick leave, $850 a month, in fact, and I had to go to a psychiatrist once a week. So, I did that, and after about 3 months the psychiatrist told me or convinced me that I should stop taking amphetamines. I was also taking LSD at that time. He said I should just stop taking drugs, and I did, and I got severely depressed. The doctor did not know what to do, because usually the tool they use is amphetamines to cure this type of depression. So, he did not want to do that.

Senator Bayh. Did he know you were using drugs?

Mr. Pateros. Yes. I confided in him.

Senator Bayh. Is this the same doctor that put you on them in the first place?

Mr. Pateros. No, no. This is a psychiatrist. I went to a regular internist the first time.

Anyway, he suggested shock treatment. I said, "OK," because that was the only thing he had to offer. This way my first experience with a mental hospital. They did it on an inpatient basis.

After the shock treatment, I was mentally depressed, but confused, and I could not remember half of what had happened the year before. So, I went back in the hospital. I was kind of bitter about a lot of things, but I started feeling better when I decided that I should just stop doing what I had been doing and try to succeed in the straight world than become and bum and a speed freak, and this indicates like a change of value that happens to people on drugs of all kinds, I would say, especially the hallucinogens and the amphetamines.

Experience is the most important thing, and everything else becomes secondary. I wanted the experience of that kind of life.

So, when I got out of the hospital, I started shooting drugs, injecting them, and what I used was the pharmaceuticals again, mainly because I could get them very cheap because I had connections with wholesalers.

But I will get into that in a second.

But the thing is that the major, the big change was really with me, as far as the effects of the drugs, when I stopped dropping and started shooting. It was just a decision that I made. It became a complete obsession. It became a complete obsession to see how many or how much amphetamine I could take. And what happens, especially when you shoot, you build up a tolerance, and I was up there at one period where I was shooting about 600 milligrams a day.

Senator Byh. Six hundred milligrams?

Mr. Pateros. Yeah, and, you know, if I had not a tolerance for it, it probably would have killed me. But, on the average, it is 300 to 400 milligrams a day. Now, a day is a 24-hour period for a speed freak, which was what I was. And this would go on for maybe a week or 2 weeks.

Mr. Bayh. How long did you shoot those?

Mr. Pateros. I would shoot four times in the 24-hour period on the average, or three to five.

Senator Bayh. Did you buy this in tablet form and dilute it?

Mr. Pateros. Occasionally, when you could not get the real thing, which was a commercially manufactured injectible amphetamine, and it comes the most popular in the 30 cubic centimeter multiple-use vial, with 20 milligrams per cubic centimeter, and this is all, you know, good dope, as they would say.

Senator Bayh. You were using prescriptions?

Mr. Pateros. Yes, but I was obtaining it, even at that time I was obtaining it legally, because I was getting it from a doctor who was also involved in the drug scene, and he had a license, and he could get it. There are some of them, and some of that going on, but not a whole lot. I just happened to be associated with one. When I lost contact with them, I went directly myself to wholesalers, and what I would do was just—well, call on the phone to them and pretend I was a doctor and act like a doctor would act, you know, and get "hasseled" if someone would doubt my authenticity, or whatever. Anyway, just on the phone, I would order drugs, and have them send them to a place I had where someone else would sign for them.

The first drugs I got illegally or sort of superlegally would be, I guess, when I got an order from one of the eastern drug order houses in New Jersey, mail order drug houses, and I just filled out the form, and, you know, put M.D. after my name and my address, and they sent me a thousand tablets for $1.35, and they go for about $100 on the street.

But a lot of the people that I was with and was into my life style—we were living on the streets more or less—were shooting crystal meths which, usually, you know, is the raw material before they actually whatever brand name they are going to call the amphetamines. It is usually mixed with strychnine, or something like this, to give it an added kick.

Speed freaks, you know, that shoot—and I think you have to be shooting it to be a speed freak—get a kick——

Senator Bayh. Tell us, if you would, just what is the definition of a speed freak?

You hear about speed runs; what does this mean? How long do you take it, and what intervals?

Mr. Pateros. Well, a speed run is how long you go without sleeping. That is the length of the run, and I would say the average with a speed freak at the beginning would be 5 days up to about a week and a half to 2 weeks. This is how long you go without sleeping, and as long as you have the drug there is no apparent need for sleep. You do not feel sleepy. You feel wide awake and alert. Something happens when you run out of drugs, after about 8 or 10 hours, let us say, and you have been up for 2 weeks, and, well, again, you start feeling like you have been awake for 2 weeks, and that is hell. It is really bad. And this is what speed freaks try to avoid, and how they do it is by just constantly going out and getting more drugs.

Senator Bayh. I am advised by some that heroin is sometimes used as a vehicle to come down off of a speed high. Have you had any experience with that?

Mr. Pateros. Not with heroin, itself, because at that time I guess I was still negative about heroin, because I could see myself getting caught up with that. But I used Seconal, a barbiturate. I would shoot them, take the top off and dissolve it in water, and sift it through cotton, and inject it. That is the problem; how to solve the problem of what to do when there is no speed and you are still awake. This is helpful. It is almost unthinkable to have speed without having something to come down off of it, because it is really bad.

Senator Bayh. Is there a distinction between one type and the other?

Mr. Pateros. Yes, I would distinguish. Methamphetamines, you know, commonly called methadrine or meth or crystal is the king of amphetamines. It has got fewer side effects, as far as nervousness and drawing out, and these things.

The next in line would be the dextro-amphetamine, sulphate or "dexedrine," and below that would be the benzedrine or "bennies" that you hear so much about.

Senator Bayh. Have you had any experience with Ritalin or Preludin?

Mr. Pateros. Not Preludin, but I have had some Ritalin, and it is to me just milder than the amphetamines per dosage. But I agree with what you said earlier about—you know, it is even probable the definite abuse that would happen with Ritalin, and with what I know about Preludin, too. If you restrict it to just the amphetamines and did not deal with these as well, because——

Senator Bayh. In other words, from what you know and have experienced personally, living with and associating with those in the drug culture, the speed culture, that if you restrict dexedrine, benzedrine, and similar types of drugs, that then there would be an obvious movement towards some of these that are not included in Section II?

Mr. Pateros. Right, and there are probably some drugs, you know, like—what you should check on is the drugs that are not popular now, because Ritalin and Preludin are popular and have a lot of notoriety, but there are probably a couple of other substances hanging around that, you know, will get abused if these are restricted.

Yes; because if you could not get methadrene, you have got dexedrine, and if you do not have dexedrine, you have benzedrine, and if you could not get benzedrine, then you have got Ritalin.

Senator Bayh. How about Eskatrol?

Mr. Pateros. Well, yes. I heard about Smith, Kline & French asking to have that accepted, and that is a joke.

First of all, like the Senator that was testifying said, the amphetamines can be extracted, but besides that, before Eskatrol, another Smith, Kline & French product which was pretty popular was Dexamyl, and this was a combination of dexedrine and sodiumphenobarbital, I think which was a downer, and this was popular on the street, because of the reason it was popular with the housewife or anybody else and that is that the tranquilizer tended to eliminate a lot of the side effects that you get, you know, from the amphetamine. It was a lot harder to stay awake for longer periods of time with the Dexamyl, and this would also be true with the Eskatrol, but as far as daily abuse, it was very popular on the street. Probably the most popular amphetamine pill or capsule is Biphetamine, which is called "Black Beauties." And that also struck me as funny that they wanted to except that drug.

Senator **Bayh**. Now, you became familiar with the use of speed on the west coast. You are now living here. Is that accurate?

Mr. **Pateros**. That is right.

Senator **Bayh**. What recommendation would you make to this committee for the control of the traffic of this type of commodity in the Nation's Capital?

Mr. **Pateros**. Well, I do not see where this area is any different than any other area of the country, metropolitan area. On the east coast here, how I got my amphetamines when I continued using them, when I got back here, was I would just call up the pharmacy and say that I was a doctor, and, well, you know how your doctor calls in prescriptions over the phone and—well, how are they going to know? You know—how are they going to know if you are or are not a doctor? They really have no procedures to check. They have a lot of business over the phone, and if they took the time, you know, to really do a thorough check on people calling, they would not be able to handle the volume of business. But what the procedure generally is, is to call a doctor that is somewhat removed from the area of the pharmacy. Find out, make sure that he is not available by trying to reach him yourself, and then using that doctor's name and telephone number and address, calling the pharmacy and placing the order for whatever it is you want. Then, you know, you have yourself—or someone else, which is better—go by and pick it up if that were the patient picking up the prescription, and that is getting very popular now.

It is a little hard to do in the District, because they have some drugs—and I am not sure which—that they doublecheck on, the pharmacies, and I do not know why this is. It is just a policy, but in Montgomery County, it is no problem at all.

Senator **Bayh**. How did you get off of this?

Mr. **Pateros**. How did I get off?

Senator **Bayh**. If you are—or maybe you are still on speed?

Mr. **Pateros**. No; I have not had any amphetamines for 9 months. I have not had any drugs of any kind for that long.

Senator **Bayh**. What happened?

Mr. **Pateros**. OK. What was going on was that I was constantly getting committed to mental hospitals. I have had nine mental hospital admissions, and I would get out of the hospital, go for a while, not liking living down here in the role that everyone lives in, and I would want to get high again. So, I would start taking speed again, and I would become psychotic. Well, I would get to the point where I could not communicate normally, and I would get committed to a mental hospital ,and it was really a bad experience, ending up in the back ward of a mental hospital, along with a lot of other fellowspeed freaks, by the way.

But what happened was I just snapped. It was not getting it, you know, really, this constant in-and-out of the mental hospitals, and, so, what happened with me is that I had a friend that works up in the Montgomery County Drug Abuse Clinic where I was going occasionally, one night a week, and she sent me down to an organization called Rapp, Inc. And I have been living here at Rapp now for about 4½ months. And, as far as I am concerned, it is the solution to my problem.

What happens at Rapp is—well, it is a 24-hour live-in environment, totally drug-free, and we are a bunch of people that have one particular thing in common, and that is the drug problem. And, you know, we are open and relating to each other, and a lot of tools are provided by the environment that enables us to deal and to enjoy and live in the normal world, without having to go someplace else in your mind to escape your hassles and the everyday ups and downs that everyone experiences. And it is also a reeducation, in that you get a lot of information about some things that, you know, we have all missed and passed over as far as what is going on socially and politically as well as psychological things and these types of areas.

What we are doing is—or what I am doing and most of us are doing—is forming new values. As I said before, like the experience, it was a far-out experience, and that was the most important value. Now, it is a matter of finding some purpose and something to do constructively, and putting that, you know, as a high value, as well as just being able to relate and communicate with the 60 other people.

Senator **Bayh**. After what you have gone through, would you support our efforts to restrict these commodities?

Mr. PATEROS. Yes. I do not think you are going to do a whole lot with the bill, but I think it is the first step in this area.

Senator BAYH. Well, let us be the judge as to what we accomplish.

Mr. PATEROS. Yes.

Senator BAYH. It is rather obvious from what you have described that some of the laws are not being enforced and those that dispense these drugs are not following the present law, but, at least, it would be your judgment that this is not the type of experience that a young man or woman in this country, or any human being, ought to go through?

Mr. PATEROS. No. I do not think, in the long run, it is valuable, living like, you know, living for the moment now. Well, I would say that at the time you would say "This is out of sight, and fine." And while you are taking the drugs, "Yes," you do say, "Yes, this is worthwhile; I should be doing it." But, see, you know, the effects of what it has on your life as a whole, and, you know, I have suffered a lot more because of drugs, and, you know, I have felt good because of drugs——

Senator BAYH. Fine. Well, perhaps, we should let Mr. Williams and Mr. Andrews join us in the dialog here.

Mr. Williams, why don't you give us your thoughts about this?

How old were you when you got started, and what was your experience that you went through?

What was the impact of the amphetamine or the speed on your system?

How did you get it, and what is your general opinion, now that you have been through it?

Mr. WILLIAMS. I guess I was about 16 or 17 at the time. I was in high school.

Senator BAYH. How old are you now, may I ask?

Mr. WILLIAMS. Nineteen. At the time I did it, it was over about—I had all my amphetamine experience when I was—well, it was within about a 12-month period, and I only did it about 20 times in all.

The first time was crystal methadrene which was injected into the vein, and on a number of other occasions I used the pills and Dexedrine, Dexamyl, and this sort of thing. Sometimes I used some just for the purpose of staying awake, like driving late at night, studying, and this sort of thing. Other times, I used them just to get high. I used Methadrene twice, injected it twice, for the purpose of getting high. The first time, it was pleasant and coming off of it was not extremely unpleasant all the way through.

The injection, right after the injection, it was hallucinations of all kinds of things, and it lasted like for 2 days, more than 2 days, and the depression afterwards. A similar experience occurred with biphetamine, which John mentioned, which is a combination drug.

But my experience, my personal experience, with amphetamines was limited. I became a heroin addict later, and spent some time in a mental hospital. There were a lot of speed freaks, as John said, in the mental hospital, and most of the experiences they related to me are similar to his.

Senator BAYH. How did you get these drugs?

Mr. WILLIAMS. With me, I got them from people selling them, like the other drugs. I was doing a lot of acid at the time, but all of mine was just street contacts. I did not have any kind of "in" like John had with the distributors.

Senator BAYH. Did you have to have a prescription to get them?

Mr. WILLIAMS. No. I never did that for amphetamines. I did that for Methadrene when I was a heroin addict, but I never did for amphetamines. They are so readily available on college campuses, and I have not seen it too much of it around in the last year or two, but back when I was doing it, you know, it was just easy to get, just like anything you wanted, like anything else.

Senator BAYH. Did you start with speed and then move to heroin. Was there some relationship there?

Mr. WILLIAMS. No. I do not think that there have been any relationships between any of the drugs I have taken. The first thing I did was smoke marihuana, and there was not any kind of a progression from one to another—you know. At the time I was using speed, I was using a lot of acid and a lot of pot, and then later I got into barbiturates, and then eventually narcotics, and heroin, and morphine, and stuff.

Senator BAYH. There is no relationship, yet the progression occurred.

Mr. WILLIAMS. I guess the progression occurred, if you want to look at it that way, but, you know, I used different things at different times.

Senator BAYH. I am not trying to cross-examine you, because I do not know what goes through a person's mind. But you did start by smoking marihuana, and then you did shoot speed, and then you did shoot heroin. At least, in the one individual, you have had all of these experiences.

Mr. WILLIAMS. OK. I do not know if one led to another, necessarily, though.

Senator BAYH. Have you been able to break the heroin habit? Are you on methadone now?

Mr. WILLIAMS. No; I was in a psychiatric hospital for almost a year. And I was detoxified there and just did not go back to it when I got out.

Senator BAYH. How long has that been?

Mr. WILLIAMS. I have been out about 2½ years.

Senator BAYH. Very good; very good. Congratulations.

Mr. WILLIAMS. No; it has been 2½ years since I got off. I was in the hospital one of those years.

Senator BAYH. And in your experience, these pills which you used, the speed, are readily available about anyplace?

Mr. WILLIAMS. I do not know about it now. I have not seen too much, because I have not been involved in that group, in that society, as much, but I know that at college campuses you get it very easy, especially the pills. I do not know about the crystal now.

Senator BAYH. Well, Clyde, can you give us your experiences, please?

Mr. ANDREWS. My experience all occurred on the university campus.

As Mark said, it is definitely the pills and this definitely is easily available.

Senator BAYH. How do you go about getting them?

Suppose you are on campus; how do you go about getting them?

Mr. ANDREWS. I buy them from somebody else. I never got them from a drugstore or stole any of them or anything like that. I am not even sure how the people who originally got them got them, but the fact is that they are manufactured pills. I have never seen pills that were made; I have never seen amphetamine pills that were made in a basement or underground laboratory. They all, you know, many of them have company letters stamped on them. There are numerous types of pills, different types, you know, and they look different. I am not sure what the actual difference is between the pills, but I guess it is just a difference of strength.

I originally—my first experience was with dexadrene, or that is what I was told it was. I used it just to stay up all night long, which is all it did for me, actually, the only effect it had on me was to keep me alert all night. That is the only effect I noticed.

Later, I had stronger things including crystal methadrene. I never injected it. I snorted it in my nose. Though that was a much more intense thing. With that—well, if you want to hear about my experience with that——

Senator BAYH. If that is not embarrassing, yes; we would like to have a better idea about just what impact this had on you.

Mr. ANDREWS. Well, an example: I would snort it, and I am not sure exactly how much in terms of milligrams, but it was brown crystal methadrene, and maybe half an hour later I would start feeling it. I would start building up, and you sort of start feeling nervous, shaky, and then I do not know. It is sort of hard to describe the feeling. It is sort of a tingling all over for like 14 hours it lasts, and your mind is racing. You cannot really keep your thoughts on one thing. You feel really good like, I think, probably better than I have ever at any other time, but at the end when this starts wearing off, it wears off really suddenly, and you start feeling nauseous, and then you cannot—I did not sleep for maybe 2 days. My body was sore. My teeth were so sore that I could not eat anything. It also kind of makes your mouth dry and gives you a bad taste in your mouth until it has worn off completely. And just the aftereffects from it were so devastating that they did not make the original effect worth it at all.

I think I have also had speed in the form of when it has been used as a base for LSD. In other words, LSD is just a small, tiny dot of liquid, and they have to put it on something, so the most common thing to use is some sort of amphetamine, and it is sort of—it is not always that easy to distinguish between the effects of the LSD and the amphetamine. But you know, you can tell that there is speed.

Senator BAYH. How long a period of time did you use this type of drug?

Mr. ANDREWS. I have only used crystal methadrene maybe four or five times. The whole thing took place over a period of about 5 or 6 months, and ended up maybe 6 months ago.

Senator BAYH. Have you ever used heroin?

Mr. ANDREWS. No.

Senator BAYH. Again, you had no problem getting access to it?

Mr. ANDREWS. No problem. On the college campus, people, you know, no one seems to be worried at all about using them, just as a study guide. People who would never consider, probably would not even consider smoking marihuana, you know, would take a dexedrine to keep them up all night to write a paper or something, and it is just easily available. There is never any problem getting it.

Senator BAYH. Senator, would you like to ask some questions?

Senator EAGLETON. Mr. Chairman, if I could I would like to ask a couple of questions of John. Let me say if all of these drugs were moved up to schedule II, phone-in prescriptions to druggists and pharmacists would be prohibited. It does not mean that there would not be any violations, but, at least, it would be per se prohibited. You would have to have a written prescription from the doctor, a nonrefillable written prescription.

John, you said in your earlier testimony that in the early stages of your use of speed you went to wholesalers. Just to clarify the record, I take it those were "legitimate drug wholesalers" or "wholesale distributors" and not illicit, illegal, back-alley wholesalers? Is that correct.

Mr. PATEROS. That is true.

Senator EAGLETON. You went to the legitimate wholesalers that would readily sell you a substantial quantity of speed pills; right?

Mr. PATEROS. Now, the first contact I had with wholesalers was a mail order company. There are several, but I would say there are three big ones, and every one—all the doctors and every one—they do a tremendous volume.

Senator EAGLETON. Can you recall the names?

Mr. PATEROS. Darby is the one—the other two—I cannot remember the other two, but Darby is the one I used.

Senator EAGLETON. Is that the one in New Jersey?

Mr. PATEROS. Yes; they, you know, just as a matter of course, fill, you know, probably thousands of orders a day.

Senator EAGLETON. Well, you wrote in with an M.D. after your name and you got a thousand pills for a $1.35?

Mr. PATEROS. Right; right. Now, you know as far as—I would say that probably through the mail order companies is where your drugs could be rechanneled from, you know, ethical professional use, into the streets.

Senator EAGLETON. Last October when this same amendment that is now in bill form was cast in the Senate, Smith Kline, & French and other purveyors of these drugs made much of the fact that the conference moved liquid amphetamines to schedule II leaving the impression that would eliminate the problem. How difficult is it to dilute amphetamine tablets and capsules into a liquid form for injection purposes?

Mr. PATEROS. Depending on the product, it varies. A big favorite on the west coast was obetrol, which to the west coast would be what biphetamine would be to the east coast. You just crush it up and it disolves completely, the base and everything, and then you inject that.

There are several products that are put out in nondigestible tablet, plastic bases, and these, you know, you cannot crush them or anything, but what you do is you just soak them overnight in water. You see, an amphetamine is really water soluble, a lot more than most things.

Senator EAGLETON. You do not have to be a trained biochemist to do this?

Mr. PATEROS. Oh, no; no.

Senator EAGLETON. It is realtively simple, if you put your mind to it?

Mr. PATEROS. Yes.

Senator EAGLETON. How simple is it with eskatrol to separate out the amphetamine ingredient of eskatrol and thus inject it?

Mr. PATEROS. It is not too difficult. What happens is that the amphetamine dissolves and the barbiturate does not. It just stays in a sort of suspension type of form, and then you just draw out the liquid. Whatever you put into water with an amphetamine, amphetamine goes right into the water.

Senator EAGLETON. Finally, do you agree with what has been stated by both Clyde and Mark, namely, amphetamines and amphetamine type and related substances are readily available if one puts his mind to seeking them out?

Mr. PATEROS. Yes, and in a lot of cases even if one does not put one's mind to seeking them out. The big thing, you know—and this goes for all drugs—is that it is an act of friendship in the youth generation to turn someone onto drugs, to give someone drugs, and this happens a lot. It is an attitude and part of the values that are going on. I think a big cause of this is with the media, and I do not know, but if you watch your television and if your mother-in-law bothers you, you take Alka-Seltzer; so if you are a kid, you know, you get into this thing and say, "Well, the way to solve these problems, if you are having trouble sleeping, if you are having trouble staying alert, losing weight—all of these things, the way to solve these problems is by swallowing something." And, you know, it is only reasonable that this would go on, you know, beyond that staying awake to study, for instance, or whatever. So, it is a thing, I think, that the media is creating about drugs, you know. It is just this whole thing of—well, this is the solution. If you do not feel good, you take this or that or the other thing. So, this is the attitude that now prevails with people. When you first think about taking drugs, it is not really a big decision, you know; it is just a natural thing to do.

Senator Eagleton. Thank you, Mr. Chairman.

Senator Bayh. Let me just pose a question to the three of you. What in your various experiences has been the cost of a daily habit?

Mr. Pateros. Well, with me, because of most of the time getting them very cheaply from, you know, the pharmacy or the wholesaler, it was not too much, and my cost, I would say, on the average, would be—oh $4 or $5 a day.

Senator Bayh. You may have gotten them cheaply, but you were using a pretty good shot, too.

Mr. Pateros. Right; and I did not always get them at $1.35 a thousand. But the liquid, which is the king of the amphetamines, so far as the speed freak is concerned, liquid methamphetamine, on the street 30-cc. vials, will go for $40 to $50, and now with them stopping production, it probably will just be unbelievably expensive to get that.

As far as speed freaks go, the crystal form, which is not gotten from regular professional sources, but rather gotten from the street dealer who in turn gets the raw material that the manufacturer would use to make the amphetamine, this is the crystal meth, and it runs, if you have a tolerance, around $10 a shot and it would cost you $30, $40, or $50 a day.

Senator Bayh. Mark, what was your experience with the daily habit cost?

Mr. Williams. Well, I was not doing it that much to have a daily habit or doing it on a daily, habitual basis.

Senator Bayh. When you were doing it what did it cost?

Mr. Williams. The pills cost like 10 cents or 25 cents apiece and the crystal methadrene, they usually sold it by the spoonful, and it cost from $1 to $5 a spoon, depending on how good the guy said it was. So, it varied. There was no real way to tell on the black market the cost of something, you know, because it was up to the individual who was selling it, really, to put the price tag on it.

Senator Bayh. Clyde, what was your cost?

Mr. Andrews. Well, I would not have any idea what actually a daily habit would cost, but just for individual pills, the dexedrine, and all the things like that, that usually costs about 25 cents to 50 cents each, and as far as crystal methadrene went, I never bought it by the spoonful, but individual doses could be maybe $1 or $2 each.

Senator Bayh. In other words, I guess we can say from what you three gentlemen have said that these drugs are readily accessible, and the expense is not prohibitive.

Thank you, gentlemen. You have been very kind to let us have the benefit of your experiences.

APPENDIX 5

Senator Bayh. Our next testimony will be presented by four individuals who have had personal experience with the abuse of the amphetamine—diet pills—we are studying. Mr. Richard Hartig, director of Topic House in Prince Georges County, Mary Godo, Gary Doby, and Steven Sharp. If you would come forward now, please.

Mr. Hartig, are you ready? We appreciate very much all of you taking the time to share your thoughts and experiences with us.

STATEMENT OF MR. RICHARD HARTIG, DIRECTOR, TOPIC HOUSE, PRINCE GEORGES COUNTY, MD., ACCOMPANIED BY MARY GODO, GARY DOBY AND STEVEN SHARP[1]

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[1] Hearings before the Senate Subcommittee to Investigate Juvenile Delinquency on "Diet Pill (Amphetamines) Traffic, Abuse and Regulation," Feb. 7, 1972, pp. 111–21.

Mr. HARTIG. I am Richard Hartig, the director of the Topic House. It is a drug center in Suitland, Temple Hills, Md. Do you want me to give a brief summary of the house?

Senator BAYH. Please.

Mr. HARTIG. The Topic House means talking over problems in confidence, and it was established about 6 months ago by a group of churches to resolve the drug abuse problem and the addiction problem in the area. It is backed by about eight churches of various denominations and contributions they make to the place.

We have a house, an old house, that we have converted into a drug center. It is not a halfway house. It is a place where we have rap sessions, therapy groups, and speakers, et cetera.

We are connected with the Prince Georges County drug program in that we have a group of young people who are called roving leaders. Mary Godo on my right is one of them. These roving leaders go out into the shopping centers, and out into places where they meet the people their same age in resolving the drug situation today, and by rapping, and by referring them to services, et cetera. We have five of these young people who are paid a minimal salary by the county for 3 hours a day, and they are doing about three to twice as much time, giving time into this problem as really is required of them.

We received about 40 calls a day into the house relating anywhere from suicides to wanting jobs, et cetera, and giving family relationships and background and everything. We find that most of these problems are drug related.

The two gentlemen on my left have been some of the young men who have been helped by coming to the place, and I think they can give you a little bit of information on drug use and abuses from their own experiences, et cetera.

I might say that we have two hot lines and we are located at 4911 St. Barnabas Road, and we are open from 1 p.m. till 9 p.m. Every Monday and Thursday night, through the auspices of Dr. Wonderlick's guide group, we have psychologists conduct therapy sessions for these young people. They are interviewed on a personal basis, and with the juveniles who are under 18, their parents must consent and take part in these sessions also. If a person is in a bad enough state where they need detoxification or methadone treatment, we can refer them to the county drug treatment center. Most of them, however, have problems that are related, and trips that are not strung out, or they are original users, and we try to get them into an atmosphere where drugs are not allowed and drugs are not used, and through an educational way, through speakers and et cetera, and particularly through this group therapy get at some of the causes of drug problems today. I understand that the focus today is diet pill or amphetamine abuse. We will be very glad to answer any questions that you might have.

Senator BAYH. Yes. How many people do you treat or counsel at Topic House?

Mr. HARTIG. Well, when they first come in, we give them a form. It is anonymous, and no names are required, and they give us a brief history of their background, not only of home and educational background, but of their drug usage. And then these are generally young people that live in the area, and we get to know them quite well. We encourage them then to come into the place and get into the therapy groups, or schedule drug speakers, and we have a program with movies every Tuesday night. At other times, it is an informal grouping and we have rap sessions and we discuss the problems. We have a doctor, and we are connected with doctors in the community who refer people to us. We are connected with the juvenile services who have young people into the group therapy sessions, and we are connected—well, we are connected with different organizations in the mental health department who, when they have people who have drug problems, basically they refer them to us.

Senator BAYH. Could you tell me, please, how many young people you are treating, or counseling, or rapping with?

Mr. HARTIG. As I mentioned, we receive about 40 calls on the hot line during the day. We have this for approximately 400 face-toface, one-to-one personal contacts that we have made and dealt with. Anytime during the day, when it is open until closing, you will find from a dozen to two dozen young people in the place, in the house.

Senator BAYH. You have had about 400 in therapy?

Mr. HARTIG. Yes, in the therapy groups. The therapy, group therapy, is on Monday night for people under 18, and there are two groups being conducted by this guide, Dr. Wonderlick's guide therapy group, and they are full. There are about eight people in each group meeting from 7:30 to 8:30 p.m. and 8:30 to 10 p.m. Their parents meet on a separate night. Adult groups meet on a Thursday evening at 6:30 p.m. for an hour and a half, and then another hour and a half, and they have about 10 in each group. Now, these are people who have requested, who have been interviewed personally and I think we are having some good results. These two gentlemen on my left are in these groups, and right now.

Senator BAYH. Could you gentlemen identify yourselves for the record here, please?

Mr. SHARP. Yes. My name is Steve Sharp.

Senator BAYH. Steve Sharp?

Mr. SHARP. Yes.

Mr. DOBY. I am Gary Doby.

Senator BAYH. Mary, why don't you start by telling us exactly how you got involved with Topic, and what you generally try to do. Give us what experience you may have observed relative to the amphetamine diet pill problem we are discussing here.

Miss GODO. Well, I got started in the Topic House by an accident.

Senator BAYH. Could you pull the microphone up closer to you?

Miss GODO. I got started in the Topic House by an accident. I was walking down the road and one of the fellows that works there picked me up hitchhiking. He told me about the place. I had been dealing with drugs for about 8 years. I went there. I cannot say that I was very enthused when I first went there.

Senator BAYH. Could you pull that up closer? My battery in my hearing aid is run down a little [Laughter.]

Miss GODO. I wasn' t very enthused with the program when I first went there because, you know, I kind of just went there to find out what it was like.

Then, after a week or so, I got very deeply involved. I started calling places to find out where you could get help for things like drugs, where you could take people that are on drugs that want to get off drugs, to send them where they will not have any police record. This is the main thing, the reason why most kids will come into the Topic House and other organizations like this, because they do not want a police record.

I started drugs with using marihuana, and I went and used speed, and I——

Senator BAYH. Do not be nervous. This is very helpful to us. Take your time and tell as you see it, as it is.

Miss GODO. Well, I will give you what I feel about it. I think it is doing a really great thing. Myself, I have had lots of girls come to me and talk to me about their problems, and it does seem to me that a lot of people, I mean, a lot of teenagers and adults ought to understand each other, and this is very necessary now.

I will get back. O.K. I started speed, and the kind of speed I did was black beauties,[1] and what was called white cross. I was into this for 6 months, and I was 125 pounds, and I went down to 90 pounds. And it is not as easy stopping, as, you know, like everybody says, well, you can take speed, and you know, you are not addicted.

Senator BAYH. I am not certain I follow what you said. You say you started with marihuana, and then you moved to speed?

Miss GODO. Yeh, I moved to speed through a friend.

Senator BAYH. Pardon me?

Miss GODO. I got on speed through a friend. There was a very heavy set lady who lives around the corner from me, and she used to go to three different doctors and get prescriptions for all three different types of speed.

Senator BAYH. When you talk about speed, are you talking about diet pills?

Miss GODO. Yes.

Senator BAYH. I want to make sure we get our lingos straightened out. To some people speed suggests that you have to shoot it. You were taking these pills orally?

Miss GODO. Yes, I was. She asked me one day if I would like some. I was feeling real down in the dumps, and I did not have like all the sense I guess I should have had, and she said, well, this will perk you up, and I had not had much sleep, so I took one of them and I felt really great. So, I kept coming back to her until she stopped giving them to me, and then a friend that lived next door to me gave me some, and I just went on from there. And then I used to go with an addict who used to sell speed, and that's what introduced me to white cross.

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[1] Biphetamine,® see Appendix B, 5(a–e).

Senator Bayh. You said white cross? What is white cross?

Miss Godo. I am not sure. I just know that it is a diet pill.

Senator Bayh. It is another kind of diet pill?

Miss Godo. Yes.

Senator Bayh. Did you take them?

Miss Godo. Yes; I did.

Senator Bayh. How many pills were you taking a day?

Miss Godo. Anywhere from three to four. It would depend on how many I could get.

Senator Bayh. Three to four?

And how long did you take these diet pills?

Miss Godo. About 6 months.

Senator Bayh. About 6 months? Then what happened?

Miss Godo. I just, I just gave up on them. I was losing weight, and I looked terrible. I looked just like a ghost, and so I just gave them up. When you come down off of them, it is very hard to stop taking them. It is very hard to stop doing them after a while, because you get this—it is like you were all up, and you have all of this energy, and all of a sudden, it hits you in the back of the neck, and you have no energy any more, and you are really tired, and your whole body is aching with pain from taking these.

Senator Bayh. Did you use anything to help you off the high?

Miss Godo. No; I did not. I just did it with myself, and I told myself that it was not good.

Senator Bayh. You did not take any barbiturates to try and balance the speed?

Miss Godo. No, I did go into barbs, though, but I could not take barbs. They were too much for me. I used to get sick, so I tried a couple of times, but it did not work and I could not take them.

Senator Bayh. You got these amphetamines without going to a doctor or without having to present to prescription?

Miss Godo. Yes; I did.

Senator Bayh. Did you buy these pills from the lady next door, or did she give them to you?

Miss Godo. It did not start out that way, but it ended up that way.

Senator Bayh. What does a pill cost?

Miss Godo. Well, you can get—well, the black beauties did not cost me anything.

Senator Bayh. The black beauties? Biphetamine®?

Miss Godo. I did not pay for them. They gave them to me. The white crosses were four for a dollar.

Senator Bayh. Do you live with your parents, Mary?

Miss Godo. Yes; I did. My mother.

Senator Bayh. Was your mother at all concerned when you went from 130 to 90 pounds?

Miss Godo. Well, I was kind of like batted around, and I did not live at home, you know, all of the time. And I guess, you know, it was just like, gradually, and I did not lose it all at once, and it was just, you know, I started getting very weak, and so I just quit myself, you know. I told her I was using drugs, and I did not tell her—well, it is kind of when you get into it after a while, you kind of want somebody to say, look, I know you are doing drugs and I will help you. I used to leave little hints around, and I knew she knew, because I used to get parsley and put it into a jar and put it up in my closet to look like marihuana, so I would put it up in my closet and she used to find it. And she would think that it was marihuana, but it wasn't, just to leave little hints around. But then, when I found out that I had to do it on my own, I did it on my own.

Senator Bayh. Could you relate any experiences you may have had talking to other young women such as yourself that may have had similar experiences, or more severe experiences than you, with speed?

Miss Godo. Well, a couple of years ago, my girlfriend got almost a complete breakdown from them because her system was just, you know, was built up to taking all of this speed, and then all of a sudden you could not get any and she just, you know, had a complete nervous breakdown.

Senator Bayh. How much speed was she taking a day?

Miss Godo. About eight.

Senator BAYH. How did she get those pills?

Miss GODO. She bought them in the street.

Senator BAYH. On the street?

Miss GODO. Yes.

Senator BAYH. In your community, it is readily available?

Miss GODO. Yes.

Senator BAYH. Where do you generally buy?

Miss GODO. I would rather not say.

Senator BAYH. I will ask the question and you do not have to answer it. Did you have a drug store or somebody on the corner, or was there a regular dealer?

Miss GODO. You can get drugs anywhere you want to if you are looking for them. You can get them. You can find them.

Senator BAYH. Is that the case now?

Miss GODO. Yes; it is.

Senator BAYH. Today?

Miss GODO. Yes; it is. You know, I would like to put one thing on that I know about, and that is a policeman told me that a man was going to an elementary school giving heroin out to the youngsters, free. I think that this has got to be stopped. I mean, you know, elementary school children.

Senator BAYH. A policeman told you that?

Miss GODO. He said that he was going to make an arrest on this guy that was distributing the heroin through the schools.

Senator BAYH. Well, I would hope that he did.

Miss GODO. Well, I do not know if he did or not. I mean, I have not heard from him since then.

Senator BAYH. All right. Gentlemen, why don't you tell us what your experience has been. Steve, do you want to start?

Mr. SHARP. Is there anything basically you want to know about it?

Senator BAYH. You might pull the microphone closer. I would like to know basically what your experience with drugs has been. How you got started? What specifically your experience with speed has been?

Mr. SHARP. Well, I basically got started on it by buying it off the street because, like, basically, you can get any kind of drug you want just down at the street corner, the shopping center, almost any place, and like amphetamines, you know, are just as easy to obtain as barbiturates or anything else.

Senator BAYH. Well, did you take the diet pills?

Mr. SHARP. Yes; I have.

Senator BAYH. Could you tell us how you got started with them?

Mr. SHARP. I happened to be in school one day, and a friend of mine had some. I popped a couple. I got them in the street, and I started getting into them.

Senator BAYH. How long did you take speed?

Mr. SHARP. I was not really into speed, you know, except for a couple of months, and then I got out of speed and started going on to other drugs. But, I took like Dexedrine® and barbs and things like that.

Senator BAYH. Are you taking barbs as well as speed?

Mr. SHARP. Well, you know, barbiturates came later on.

Senator BAYH. Pardon?

Mr. SHARP. Barbiturates came later on, and I started getting the downs after the speed.

Senator BAYH. You took the speed for a couple of months?

Mr. SHARP. Uh-huh.

Senator BAYH. How many pills did you take a day when you were taking speed?

Mr. Sharp. It really varied. If I had them. I was not really addicted to them.

Senator Bayh. What was the most you ever took in 1 day?

Mr. Sharp. About six or seven.

Senator Bayh. About six or seven?

Is it possible to take six or seven and then not take any at all?

Mr. Sharp. It is possible to take it, but you cannot keep it up for quite a few days.

Senator Bayh. Did you switch to barbs after the speed?

Mr. Sharp. Yes.

Senator Bayh. How did all that happen? What was your experience with barbs?

Mr. Sharp. Well, like, you know, I just happened to be at a friend's house, and like, you know, they just happened to throw me on to it, and I started getting into that.

Sentaor Bayh. How many barbs did you take in a day?

Mr. Sharp. I was taking quite a few of them. I was taking an average of 12 or 15 at times.

Senator Bayh. Twelve or 15 at one time?

Mr. Sharp. Uh-huh.

Senator Bayh. How regular and how often did you take those?

Mr. Sharp. I basically take them in the morning, and in the afternoon and evening.

Senatoor Bayh. Twelve or 15 each time?

Mr. Sharp. No, not each time. Through the whole day.

Senator Bayh. Over how long a period of time did you follow that course, Steve?

Mr. Sharp. For about 2 or 3 months.

Senator Bayh. Two or three months? Could you contrast the different effects of speed and the barbs?

Mr. Sharp. Well, like basically, speed is more or less like a stimulant, where, you know, where it picks your body up and it speeds up the process and stuff like that. The barbs is more or less something that gives you, you know, a drunk feeling, if that makes any sense. It is really hard to explain what it's like. You really have to experience it to find out.

Senator Bayh. Have you ever been in a position where you were taking 15 barbs a day, and then you could not get any?

Mr. Sharp. Yeah. That is basically how I am off them, because this doctor I was getting them from cut me off from my prescriptions.

Senator Bayh. You were getting both the speed and the barbs from the doctor?

Mr. Sharp. No, I never got a prescription for speed from the doctor, just barbiturates.

Senator Bayh. How did you get them? Did you go to the doctor and say that you were sick?

Mr. Sharp. Well, the thing is I would go into him for heroin. For the heroin, I was getting methadone, and after the methadone was cut out, I started getting the barbiturates, and he finally cut me off of them.

Senator Bayh. How long were you on heroin?

Mr. Sharp. Off and on for about 2 years.

Senator Bayh. Was that before or after——

Mr. Sharp. This was after I got into the speed.

Senator Bayh. You got into speed, and then heroin, and then barbiturates, is that the way it went?

Mr. Sharp. Uh-huh.

Senator Bayh. Did you ever shoot either the speed or the barb?

Mr. Sharp. I shot speed and barbs both. I have eaten them both too.

Senator Bayh. Are you using any drugs now or have you got it licked?

Mr. Sharp. No, I still use them every now and then.

Mr. Hartis. I might say that Steve is in a lot better shape, however, than when we first met him a few months ago. I think he has cut down a great amount. One thing we do not allow in the center is the use of drugs or the distribution of them. We try to get at the problems of these young people. I think Gary can explain a little more on that. But I can clarify that statement, that he is a lot better shape than we had known him a few months ago.

Senator Bayh. Is it possible to get barbs now without prescription?

Mr. Sharp. You can get barbs in the street almost any time.

Senator Bayh. What do they cost?

Mr. Sharp. Usually about 50 cents now because they are a little harder to acquire now that the doctors have stopped giving out the prescriptions.

Senator Bayh. Is it the same for amphetamines and speed?

Mr. Sharp. Basically the same, but I can acquire them on the streets with no problem.

Senator Bayh. On the street?

Mr. Sharp. But you can acquire them on the streets.

Senator Bayh. Do you know who's pushing them?

Mr. Sharp. Well, I know where to get it if I want it.

Senator Bayh. What kind of barbs are generally available?

Mr. Sharp. Desbutols—a large variety of them.

Senator Bayh. Gary, what has been your experience with drugs?

Mr. Doby. Well, my first introduction to speed was through a physician. I was a little overweight and had high blood pressure. I went to a physician and he prescribed some diet tablets for me, and after taking them for a short time, I started doubling my dosage, and felt much better, felt quite energetic, so I started taking them, abusing them, rather, by taking the larger amount than was prescribed for me. That is how I first was introduced to speed.

And then after that I met a nurse that had prescription pads, and she used to write out prescriptions and sign physician's names, and then I would take those to the drug store and get them filled for amphetamines. And I probably—we would get maybe a prescription for 60 pills, and then in 1 weekend, between about three and four people, they would all be gone. So we used them quite often for a period of about 6 months, and after that time, it got to were coming down from the speed was a real hassle. You were real dragged out and just dull, and achy all over. So I started doing some downs to start aleviating that and help to sleep and so no, and ended up getting strung out on heroin.

Senator Bayh. You started with amphetamines, with speed?

Mr. Doby. Right.

Senator Bayh. And then you tried to get down off the speed and got involved with downs?

Mr. Doby. Opiates and heroin and stuff like that.

Senator Bayh. Could you get up a little bit closer to the mike, please?

Mr. Doby. After coming down off the speed to get away from the speed, I started into heroin and delota.

Senator Bayh. And de—what?

Mr. Doby. Delota. It is a derivative of morphine, I think. I was also doing morphine, just downs in general. But I was addicted to delota and heroin for a period of time.

Senator Bayh. Where did the barbs fit into the picture then?

Mr. Doby. Barbs—I really have not gotten into barbs too much, only on occasion I have had a few barbs, and not particularly liked the high that comes from barbs. I never really got into it enough that I was addicted or had a need for it.

Senator Bayh. Do you feel you were addicted on the speed?

Mr. Doby. I think I was because it was, you know, like I said, I needed something to help me get away from it, and the heroin and the delota and things like that will take away the pain of anything, you know. So, that is how I got into those, by trying to quit the speed, because I had a particularly bad experience with speed because a friend of mine had been doing crystal methadrine, shooting it, and we were at the pop festival in Atlanta a couple of years ago, and he really flipped out. He was really completely paranoid to everyone around him except a couple of particular friends of his, and the last I heard of him he was in the hospital. I rapped with him about 6 or 8 hours trying to help him straighten his head out, and that's when I really realized that I needed to get away from speed because I might end up just like him. So, I started getting in the heroin and the downs.

Senator BAYH. You got the speed through prescriptions.

Mr. DOBY. Yes, that is how I was first introduced to it, and then I used prescriptions for about 6 to 8 months, and after that, I started getting speed, you know, through other people. They would come down there through a channel where they would be diverted at a warehouse, and shipments would be diverted or stolen, and then they would come through other people that I would know, large quantities, and so I would acquire them there.

Senator BAYH. Were the pills stolen?

Mr. DOBY. Some were stolen, some were. Well, in a sense they were all stolen, but some of them—they were actually stolen where somebody would go up to a truck and take them, steal them off of a dock or something, or they might be, you know, rerouted in the shipment to another particular place.

Senator BAYH. What is your situation now relative to heroin?

Mr. DOBY. Right now I am not addicted to anything, I am not doing any hard drugs at all. I have not for several months now.

Senator BAYH. What does one experience when you are addicted to amphetamines like you suggest you were, and then you cannot get them?

Mr. DOBY. It is quite frustrating.

Senator BAYH. What happens, how do you feel?

Mr. DOBY. You become quite irritable, and upset, and violent, when you cannot acquire them.

Senator BAYH. Have you or any of your friends committed any type of violent act while high on speed?

Mr. DOBY. I have not actually done any physical violence, but I have become quite hostile and fearful, you know, hollering and arguing and so forth, but because I was among friends it did not actually come down to anything.

Senator BAYH. Have you seen this type of thing happen with others though?

Mr. DOBY. Yes I have.

Senator BAYH. Having had experience with both speed and heroin, which is worse as far as the withdrawal effect, on the way you think and your physical action?

Mr. DOBY. I think probably the amphetamines because they are—they drain your body, the fluid, when you are coming down, you are mentally dull. I mean, you are really dull and like you cannot understand some of the most simple things that might be said to you. You know, you are just completely tired mentally and physically. It is almost like a complete breakdown of your whole system, especially if you have been up on the amphetamines for several days, a week or something like that. It is really a hard thing to crack, and usually to avoid the crashing, you go out and get some more.

Senator BAYH. If you wanted to get some amphetamines this afternoon, would you have any trouble getting them?

Mr. DOBY. It might take me a couple of hours.

Senator BAYH. A couple of hours? Barbituates the same thing?

Mr. DOBY. Barbituates would not take that long. All you have to do is see a particular doctor or something like that.

Senator BAYH. See a what?

Mr. DOBY. Just go and see certain doctors. I understand now that there are certain doctors that give out speed that way too.

Mr. HARTIG. I wonder, Senator Bayh, fi I just might give a little brief comment on Gary. As you have readily seen and heard, he has sort of gone the gambit in the drug usage and abusage, from the hard narcotics all the way down to soft drugs. I think it was about 2 months ago Gary first came into the Topic House. He was in bad shape, flipped out right there, and crashed, and he was in the house, and we just have an old home, furnished like a living room and so forth, sort of like a home away from home, and we waited for him to wake up. And then we talked with him and counseled him. I wonder, Gary, if you cou'd take it up from there, how you came in, and then since then, what you have done and so forth?

Mr. DOBY. Like I said, when I first went to the Topic House, I was taken there by some friends because I was really messed up on barbiturates. I was really high, or I was down on barbiturates when I first went to the Topic House and friends of mine took me there, and immediately on arriving, and sitting down, I passed out. And several hours later when I came to, one of the roving leaders there talked with me, and he told me that if I needed help or wanted help, that I could come back there and talk to one of the roving leaders, or Mr. Hartig. So, a few days later I came back and talked with them, and I decided that I, you know, would like to have some help from them and immediately they showed that they were interested, so that I was very enthused with coming there and talking with them.

And at the time, I was out of a job, and they helped me to acquire a job. And also, I am going to be able to go to college very shortly, this fall, and also to help straighten my head out, to help me get away from the drugs. I associate with people who are straight now, and who do not use drugs, and through the therapy sessions with the guide program, they are helping quite a bit. And as of now, I have no desires to do any of the hard drugs at all. Well, I have not been in a situation where it was done around me and offered to me, and I have no desire to do it, and it has completely left me with the desire to not accept these drugs or to get high on them.

There are periods that do come occasionally when there is a desire. It is a mental thing, and that is the thing I am trying to get away from now, completely get away from the mental desire to do drugs. And I think I am accomplishing that because it is more seldom, and comes less often, the desire to do them, and I also have the will power now to put them aside and not to accept them.

Senator BAYH. Well, I congratulate you for that.

I appreciate, Mr. Hartig, your coming and what you are doing in the Topic House, and Mary and Steve and Gary, I appreciate your candor. Some of us who have not been there cannot understand, I suppose, fully, but you can help by sharing your personal experiences, and I do appreciate that. I hope we can continue to keep the door open and you can communicate with us.

Thank you very much for what you are all doing.

Mr. HARTIG. Thank you.

APPENDIX 6

AMPHETAMINE PSYCHOSIS: DESCRIPTION OF THE INDIVIDUALS AND PROCESS

(By E. H. Ellinwood, Jr., M.D.)

(Journal of Psychedelic Drugs, pp. 42–51, Vol. 2, No. 2, Spring 1969)

The existence of "amphetamine psychosis" is well documented. Although there is conflicting evidence as to the relative importance of drug effects vs. underlying personality factors in the precipitation of this psychotic state, Beamish & Kiloh,[4] Hampton,[10] and Young & Scoville [19] believe that it is produced primarily in persons who already manifest a personality disorder or predeliction for paranoid reaction. Connell,[6] however, suggests that the phenomenon is primarily precipitated by the effects of the drug itself. There has, unfortunately, been a singular lack of data for comparison of amphetamine abusers who develop psychosis with those who do not. Another equally important and equally uninvestigated problem is whether certain individuals prefer the use of amphetamines over other available drugs. The author believes that these neglected areas must be studied if the phenomenon of amphetamine psychosis is to be fully understood.

The aims of this study, therefore, were threefold: (1) to afford a detailed description of individual reactions to the use of large doses of amphetamines; (2) to investigate and evaluate differences in reaction patterns within the amphetamine addict population and to explore reasons for these differences; and, (3) to differentiate between the types of individuals who are consistently drawn to the use of amphetamines and those addicts who prefer other drugs.

METHODOLOGY

Subjects for this study were selected from the admission wards of the United States Public Health Service Narcotic Hospital in Lexington, Kentucky. The only criterion for selection was the use of large daily doses of amphetamine (exceeding 30 mg.) continued over a three-month period within the past two years. These subjects constituted the amphetamine group or "abusers."

TABLE 1.—TOTAL AMPHETAMINE AND GENERAL ADMISSION[1] GROUPS COMPARED

Characteristic	Total amphetamine group	General admission group
Age range	18–41	18–63
Mean age:		
Men	30	31
Women	26	30
Caucasian:		
Men (percent)	60	60
Women (percent)	93	60
Married:		
Men (percent)	20	27
Women (percent)	13	40

[1] From a previous study.

The primary source of data was the patient's responses to a standard structured interview, administered after at least two weeks complete withdrawal from all drugs. The same psychiatrist conducted and evaluated in a similar fashion all interviews, which focused upon: (1) patient's recollection of psychological and physiological reactions during the period of heavy amphetamine abuse, (2) *major patterns of perception and thinking while off drugs*, (3) assessment of personality; and, (4) developmental history. An attempt was also made to identify specific behavioral sequences stimulated by amphetamines. The first half of the interview consisted of a series of nonleading questions designed to establish the presence (Table 1), which had proved significant in previous work with amphetamine addicts. Many items used by Connell[5] were included for purposes of comparison. The latter part of the interview was open-ended to facilitate discussion of unique reactions to the amphetamines. Most patients were well aware of the amphetamine psychosis either in themselves or others, and except in two paranoid patients, there was little or no hesitancy to discuss the psychosis. One noteworthy feature of the interview was the acute memory patients had of the psychotic experience, including places, time and extraneous details. This hyperamnesis facilitated obtaining a detailed description of the psychosis. At least two-and-one-half hours were usually required for each interview.

Psychiatric evaluations and Minnesota Multiphasic Personality Inventory (MMPI) testing at the Lexington Narcotic Hospital are routinely carried out approximately one week after withdrawal from all drugs. All the post-drug diagnoses discussed in this study are taken from this evaluation. The evaluations from both this and a previous comparison study[17] were made by the same group of psychiatrists. The results of individual routine MMPI testing are always compared with a standardized Lexington addict profile. This standardized profile is used in this study as a control with which to compare the amphetamine addict profiles.

Following the interview, patients were categerized as amphetamine psychotic or nonpsychotic according to the presence or absence of all three of these symptom clusters: (1) fully formed visual hallucinations, (2) hallucinations of voices which were perceived as speaking directly to the patient; and, (3) moderately well organized delusions of persecution or gross paranoid reactions. If less than all of these three symptom criteria were present, the patient was assigned to the nonpsychotic group. It is necessary to emphasize that the terms "psychotic" and "nonpsychotic" as used in this paper refer to the status of subjects *while on amphetamines*, not to the diagnosis made after withdrawal from all drugs. Ten of the 25 amphetamine addicts were considered psychotic, eight, nonpsychotic. Of the seven addicts who fell into neither group, four exhibited only one or two of the above symptoms, and three exhibited psychotic symptomatology when not taking amphetamines though they were free of major psychotic episodes when taking the drug regularly. While the latter two groups present themselves, they shall, for the sake of clarity, be omitted from the following discussion, although they are included in the accompanying tables and figures.

To test symptom differences between the psychotic and nonpsychotic groups, the data were cast into two-by-two contingency tables. Significance levels were then determined using the Fisher exact probability test.

SAMPLES

To discover any outstanding differences between the amphetamine addicts and the general addict, the present data were compared with those of a previous investigation[17] concerned with characteristics of the general addict population of Lexington Narcotics Hospital. The sample of general addicts included amphetamine abusers.

The total amphetamine group comprised 25 subjects—ten men and 15 women.* The general Lexington admission population sample included 81 men and 30 women. (See Table 1 for a demographic comparison of the two groups). It was noted in the previous study and confirmed by the present sample that amphetamine users were more withdrawn, sociopathic, resentful of authority and had a higher incidence of nondrug psychiatric hospitalizations than the usual addict. Their incidence of previous juvenile delinquency was higher, and they had been more frequently admitted to reform schools.

RESULTS

Symptomatology.—Many symptoms of amphetamine abuse were common to both psychotic and nonpsychotic states (Table 2) and showed no continuum of severity toward psychosis. Hand-face touching and picking, gritting or gnashing teeth, an acute sense of novelty, distortion of time sense, and depression upon withdrawal were reported by both psychotic and nonpsychotic groups. Many physiological symptoms (e.g., insomnia, alertness, lack of appetite, difficulties in micturition, thirst, diaphoresis and increased energy, were also noted by both groups. Most addicts noticed loquaciousness, decreased ambivalence, a sense of cleverness and "crystal clear thinking" and an "invigorating aggressiveness," especially during initial amphetamine use. Both psychotics and nonpsychotics appeared to have had a hyperacute memory during the period of abuse both for relevant and extraneous material. Several symptoms that were specifically sought, but which were found to be rare, were synesthesia, micropsia, macropsia, visual perserveration, gross confusion, disorientation, aphasias, and calculating difficulties.

Some characteristics were present in both psychotics and nonpsychotics but became progressively more severe as the psychosis developed. Fear, suspiciousness, awareness of being watched, and visual hallucinations in the peripheral fields were quite definitely progressive. Practically all patients at some time became suspicious. Awareness of being watched was prominent when the patient was in crowds, alone, or in the dark and was not infrequently a ubiquitous feeling that someone was watching from behind or from the side. This symptom, not unlike "a presence" (symptom noted in parietal lobe lesions), became organized in the more serious psychoses. Repeatedly, reports were given of heightened awareness and over-reaction to slight movements in the peripheral vision which became a stimulus for inital illusions.

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*Because of administrative conveniences, the selection process was begun earlier for women than men, thus accounting for the over-representation of women.

TABLE 2.—PSYCHOTIC SYMPTOMS AND BEHAVIORAL CHARACTERISTICS IN THE NONPSYCHOTIC VERSUS THE PSYCHOTIC GROUP

[In Percent]

Psychotic symptom or behavioral characteristic	Non-psychotic (N=8)	Psychotic (N=10)	Total amphetamine (N=25)[1]
Psychotic symptoms:			
Suspicious and aware of being watched (a presence)	50	[3] 100	80
Organized paranoid behavior [2]	0	100	56
Gross all prevailing paranoia	0	[4] 70	28
Ideas of reference	13	[5] 100	52
Auditory hallucinations (noises)	0	100	56
Auditory hallucinations (voices speaking to patient) [2]	0	100	48
Auditory hallucinations (conversations with voices)	0	[3] 50	20
Visual hallucinations (peripheral vision fleeting)	38	[3] 100	60
Visual hallucinations (fully formed and stable) [2]	0	100	44
Tactile hallucinations	13	[3] 70	44
Olfactory hallucinations	0	[4] 70	36
Change or distortion in body schema	13	[3] 80	44
Persistence of hallucinations beyond 2 weeks of withdrawal	0	[4] 70	36
Felt some of the bizarre experiences were real	0	[4] 80	32
Behavioral characteristics:			
Libido same or decrease	88	[4] 10	52
Libido increase	13	[4] 90	48
Polymorphous sexual activity	13	[3] 80	48
Concern with eyes, faces and their distortion	13	[5] 100	56
False recognition of faces	25	80	52
Attracted to shiny objects and shadows	13	[4] 90	44
Philosophical concerns	38	80	52
Increased deja vu	13	[3] 70	44
Estrangement	0	[3] 60	32
Curiosity, examination and dismantling of objects	25	[3] 90	60
Acute sense of novelty	38	70	60
Attachment to transition objects	13	30	24
Depression on amphetamine	13	30	28
Depression on withdrawal	38	50	52
Terror and fear	30	70	60
Hand-face touching and picking	50	50	56
Gritting and gnashing teeth	63	70	68
Increased activity (task specific)	75	20	40
Inactive diffuse Pattern (daydreamer)	0	[3] 60	36
Dominant and aggressive pattern	62	30	52
Passive pattern	38	70	48

[1] Included in total amphetamine group are 7 patients who fit into neither the nonpsychotic nor the psychotic group.

[2] Psychotic criterion symptom.

[3] p less than 0.05.

[4] p less than 0.01.

[5] p less than 0.001.

Over half of the patients developed well formed delusions of persecution which appeared to be an extension of this suspiciousness and awareness of being watched. The contents of these delusions were often in keeping with the characteristic objective circumstances of the addict group, such as federal agents and incarceration. Of the few patients that were found to have been paranoid before starting on amphetamines, the drug appeared to have either little effect on the psychosis or to accentuate it. Among these patients, more common delusions were found (e.g., they were persecuted by communists, Martians, civil spirits, racial prejudice, and specific people). They were more often deluded that they were being affected by poisoned gas, or poisoned fruit.

Fear and terror were major symptoms mentioned mainly by psychotics. Frequently, the fear was associated with delusions or hallucinations, but others described a diffuse anxiety, especially over losing control. Occasionally the fear tended to abate as the delusional reasons for the fear were organized. Periods of acute terror were described in which the patient reacted to the slightest stimuli. It was not uncommon for patients to hide alone for weeks from their tormentors. One attempted suicide in a state of acute terror.

Philosophical concerns increased as patients became progressively psychotic. Such concerns were usually unsophisticated dealing with "beginnings, meanings, and essences." Revelations of significant insights were frequently experienced. These eureka experiences often ushered in prolonged periods of thinking about "the meaning of life." One patient's description was "everything became relative to some truth, a light ray would prove unity, a light ray breaking up would prove why men break up . . . I suddenly discovered how the world began." Another patient said, "I began to put details together from the past and present. Now I think I know what is going to happen to this world." Intense religiosity and involvement with Zodiac systems were also noted. Later, philosophical involvements degenerated into delusional systems. Two processes that were common to both philosophical and delusional concerns were sudden insights and compulsions to analyze a variety of details to find meaning and explanations.

Hallucinations occurred in over half of the total amphetamine group. Fourteen patients developed auditory hallucinations; 15 developed visual hallucinations; all but three who had auditory hallucinations also had visual hallucinations. Visual hallucinations started with fleeting glimpses of just recognizable images in the peripheral vision. The hallucinations later became more individualistic: some saw God, people involved in sexual activity, tormentors, buildings crumble, animals, Martians, angels and cities in the sky. Auditory hallucinations began with the patient's perception of simple noises or voices which whispered or called his name. The identity of the voices was usually unknown, but this appeared to be unimportant to the patient. Often psychotic patients perceived voices as either friendly or evil, and they devised elaborate methods to distinguish between them. In the more advanced psychoses, the patient conversed with them. Tactile hallucinations presented in seven patients, but all were incorporated in visual hallucinations. For example, patients reported infestations of microanimals and the presence of vermiform and encysted skin lesions which they felt as well as saw. Three patients had punctate scars incurred when they attempted to dig out these encysted parasites. The hallucinations became integrated into delusional material as the patient became more psychotic.

Gross distortions of bodily image were also highly correlated with psychosis. Such changes varied in degree from slight alterations in size, consistency, or color of the whole person. Some patients alleged that the right and left sides appeared separated at times or that the action of one side was antagonistic to the other. Vivid autoscopic experiences were reported by five patients. Many patients also experienced a vague loss of body boundaries and described their bodies as ethereal or transparent. They felt that others could see their feelings and read their minds. Overemphasis of visual cues and selective disregard of somesthetic sensation was apparent in the descriptions. Interestingly enough, these same patients felt themselves capable of projecting themselves to distant locales and of controlling by thought people and objects which might in turn control them.

The majority of amphetamine patients exhibited a heightened awareness and concern with faces and eyes. Such concern appeared early in amphetamine abuse, deepened as the psychosis progressed, and gradually degenerated to gross distortions of facial expressions and physiognomy. An evil cast to faces was described by half the patients, but some stated that faces were simultaneously evil and kind. Ten patients reported marked distortions. Faces melted, faded, and appeared with stockings or masks over them; blood and bone appeared; eyes changed slant and shone, faces became hairy, developed creep crevices and lines, glowed and were transformed to witches and monsters.

Both psychotics and nonpsychotics commonly reported the symptom of false recognition. These patients often falsely identified strangers as family or friends. Many accosted strangers on the street and began intimate conversations. When this symptom became more florid, everyone looked like an intimate acquaintance.

Recognition in situations other than facial recognition was heightened and distorted. Deja vu experiences on amphetamines were difficult to evaluate because most patients had noted such experiences both on and off amphetamines. However, 11 patients stated they had an increase in deja vu, and eight reported experiences of estrangement and/or depersonalization. Deja vu experiences were recalled in detail.

Personal reference and significance revealed a biphasic response to amphetamines. Initially, the drug relieved any acute sensitivity to what others thought or felt. The constant reference to one's self seen in many sensitive people was relieved. They felt confident and aggressive. Later, they became suspicious, self-conscious, and self-referent. In some patients, self-reference and the constant searching for significance and meaning in the environment appeared to have a potentiating interaction that often subsequently developed into delusional systems. Ideas of reference developed fully in 13 patients. In the beginning stages, patients over-identified with characters on television, or would hear a reference made to himself or associates. Gradually, the messages became personally directed; finally the news media and others "knew too much." The more psychotic patients moved to talking directly to the television or radio. Television, radio, and electrical equipment were often viewed as vehicles of control and manipulation.

An acute sense of novelty adn curiosity presented early in amphetamine abuse. Novelty was less pronounced than curiosity and was related to the heightened awareness of objects especially in the peripheral vision. Curiosity was not related to peripheral vision and did not need an immediate external stimulus for its evocation. Not only was it directed toward people, but also to inanimate objects which were frequently anthropomorphised.

Concurrent with the changes in awareness and curiosity, objects, took on new emotional significance; many became "overcathected." As with most paranoid illness, this significance and meaning was eventually referred to the self. Five patients became greatly attached to childhood transition objects, such as small stuffed animals. For others, neutral objects (windows, chairs, pencils) took on an evil cast. The more paranoid patients concretized the experience to poisoned food (especially fruit) and drink. Altered object evaluation was manifest in other ways too. Fifteen patients described a compulsion to take objects apart, to analyze, to sort, and on rare occasion, to put back together. These patients "analyzed" details in a very concrete and repetitive manner. More abstract visuoconstructive trends were noted, such as reading blue prints, analysis of material in terms of color, pattern and weave. The more paranoid patients tended to search intensively for signs and meaning. One patient stated, "I looked everywhere for clues—under rugs, behind pictures—and took things apart. I read magazines looking at periods with a jeweler's glass for codes . . . they were to help me solve the mystery."

Changes in libido were found to vary extensively, corroborating the findings of other investigators (Bell & Trethowan[2] and Fox & Lippert[9]). However, an increase in libido and polymorphous sexual activity most often preceded the psychoses. The nonpsychotic group reported that amphetamine use either decreased libido or had no effect. The increase in libido was described as a driven state, in which orgasm was either absent or prolonged for hours. The polymorphous sexual activity was mainly a marked increase in orogenital activity but also included extreme masochism and other sexual deviations. These changes in sexuality were most striking in those females who were frigid when abstaining from amphetamines.

Different patterns of physical activity while on amphetamine were reported: (1) active (characterized by obsessions with a specific immediate task), and, (2) relatively inactive (daydreaming, withdrawal or diffuse activity). The nonpsychotic group fit the active category, and the psychotic group the relatively inactive category. While on amphetamines, the nonpsychotics were found to be relatively aggressive and dominant, and the psychotic passive.

Developmental and Personal Characteristics.—A detailed developmental history of parent-child relationships and the patient's preadolescent reaction pattern to his parents was recorded, categorized and rated on a five-point scale. Few differences were found between the psychotic and nonpsychotic groups, although nonpsychotics appeared to rely more heavily on manipulation of parents and tended to become identified with the more aggressive parent.

Female patients were noted to have a high incidence (73 per cent) of first memories involving their father or his surrogate. In several females, these memories, along with reported dreams, seemed related to sexual conflict. The psychotic females were more prone to have first memories about their fathers than the nonpsychotic group (70 vs. 25 per cent). In contrast, 60 per cent of the males (all of whom were in the psychotic group) reported first memories dealing with feelings of helplessness, ineptness, or shame. Only one of the developmental characteristics used by Connell was found to be associated with psychosis in this study, i.e., "No friends at school" (Table 3). The incidence of several personal traits was rated to be high in both groups (Table 4) but, except for patterns of thinking, did not serve to differentiate between the two. In the the nonpsychotic group, there was a greater tendency toward verbal thinking with little visual imagery (Table 4). They did not daydream frequently, but when they did, often daydreams consisted of carrying on conversations with themselves. They also appeared more often to remember in sequences and by details. Two of these patients spontaneously mentioned a compulsion to count when anxious, or when others might ordinarily daydream. These compulsions had been present since childhood. A precise and articulate memory was also noted, though to a much lesser extent, in the psychotic patients. Three patients in the psychotic group had strong verbal recall and little, if any, daydreaming, except in the verbal mode. One even had marginal facial agnosia and lack of revisualizing ability. The psychotic group in general had less precise memories, which were more visual, intuitive, emotionally colored, less sequential and detailed. Memory of childhood events, however, was more accessible * in the psychotic group (Table 4).

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* Accessibility was evaluated on the basis of age of first memory and fullness of memory for both pleasant and unpleasant events.

TABLE 3.—CHILDHOOD TRAITS

[In percent]

Trait	Nonpsychotic (N=8)	Psychotic (N=10)	Total amphetamine (N=25)
Tantrums	25	30	24
Nail-biting	50	40	48
Severely afraid of dark	38	40	36
Severe nightmares	25	20	20
Sleepwalking	13	10	12
Encuresis	13	10	16
Truant	50	70	68
Antisocial activity before age 15	38	60	56
No school friends	13	[1] 80	52
Not keen on games	62	50	56

[1] p less than 0.05.

TABLE 4.—PERSONAL TRAITS

[In percent]

Trait	Nonpsychotic (N=8)	Psychotic (N=10)	Total amphetamine (N=25)
Poor work record	50	60	64
Ennui	25	60	48
Late sleeper	38	60	52
Alcoholism	38	40	32
Delerium tremens	0	10	8
Daydreamer	25	50	44
Prolonged homosexual relationship	25	10	16
Childhood memory repressed	38	0	24
Childhood memory average	50	30	40
Childhood memory full	13	[1] 70	36
Predominantly verbal memory	75	30	48
Predominantly visual memory	25	70	52

p less than 0.05.

Length and Tolerance of Amphetamine Habit.—Eighteen patients had abused amphetamines for at least one-and-one-half years. The nonpsychotic group had taken amphetamines longer, but at lower doses (Table 5). There was no preference for a particular type of amphetamine in either group. Five patients from each group had at times used either barbiturates or narcotics with the amphetamines. The dose relationships raise the question of why the psychotic group continued to increase their amphetamine level in the face of progressive psychosis.

Psychiatric Diagnosis.—Among the post-withdrawal diagnosis, antisocial reaction was the most frequent diagnosis in the nonpsychotic group (Table 6). However, hysteria was noted as a common factor in the four personality trait disturbances in this group. In contrast, the psychotic group received no less than four diagnoses of a schizophrenic reaction: three patients were diagnosed as personality trait disturbances, two as schizoid personalities and one as a manic depressive reaction, manic type. The six patients with a psychotic diagnosis had persistent hallucinations when interviewed. Each also had previously either withdrawn from drugs or had had a prolonged hospitalization with continued hallucinations. Five of these were still convinced that some of their bizzarre experiences were real. Composite MMPI profiles for the psychotic and nonpsychotic groups revealed remarkably similar patterns and peaks (Figure 1). Both showed peaks on the psychopathic deviance, psychasthenia, hypochondriasis, and schizophrenic scales in a pattern consistent with a disturbed borderline personality.

TABLE 5.—DOSE LEVEL AND DURATION OF AMPHETAMINE ABUSE

	Nonpsychotic (N=8)	Psychotic (N=10)
Average maximum daily dose for at least 3 months [1]	170 mg. (range 60-300 mg.)	310 mg. (range 120-500 mg).
Average duration of abuse	3.1 yr. (range 4 mos.-6 yr.)	2.2 yr. (range 5 mos.-6 yrs).

[1] The difference between the psychotic and the nonpsychotic groups is significant at p less than 0.05.

TABLE 6.—DIAGNOSTIC CATEGORIES

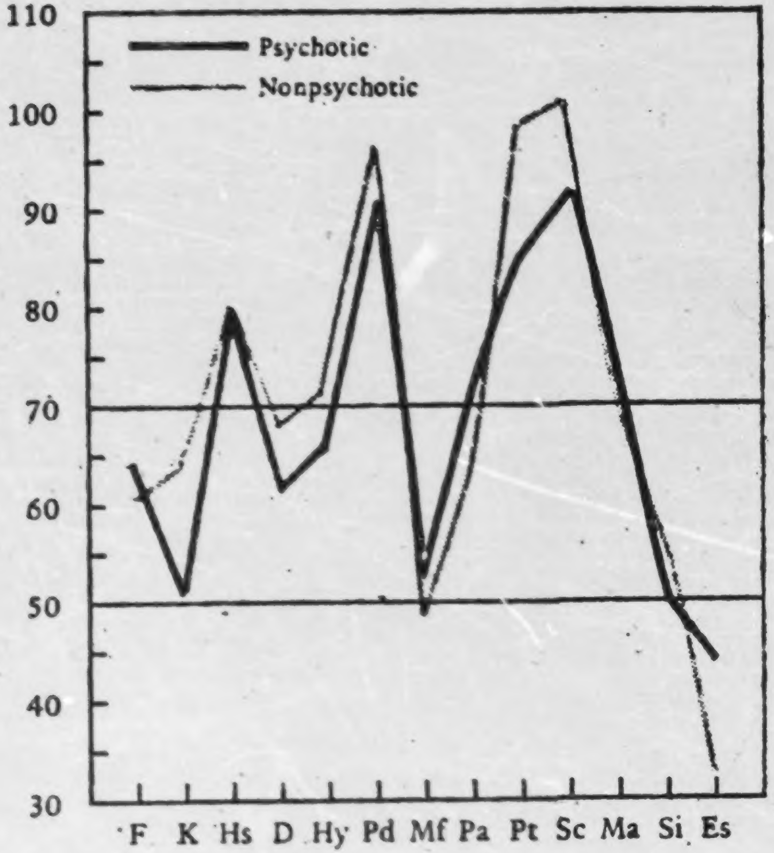
[In percent]

Diagnosis	Nonpsychotic (N=8	Psychotic (N=10)	Total amphetamine (N=25)
Schizophrenic reaction	0	40	20
Manic depressive reaction	0	10	4
Antisocial reaction	50	[1]0	20
Schizoid personality	0	20	20
Paranoid personality	0	0	4
Personality trait disturbance	50	30	28
Adolescent adjustment reaction	0	0	4

[1] p less than 0.05.

FIGURE 1

M.M.P.I. COMPOSITE OF AMPHETAMINE PSYCHOSIS AND NONPSYCHOSIS



Psychiatric diagnoses of patients in both the amphetamine abusers and in the general addict sample [17] shown in Table 7 were made by the same examiners. Because the incidence of psychosis, schizoid and sociopathic personality diagnosis had been high in amphetamine users in a former study,[17] these diagnoses were compared between these two samples. In this sample of amphetamine abusers there is again noted the high incidence of these diagnoses except for an unexplainable lack of the sociopathic label among males.

There are differences in the amphetamine vs. the general Lexington addict MMPI profiles on psychopathic deviance, schizophrenia, psychasthenia, and hypochondriasis scales (Figure 2). Two-tailed *t*-tests were calculated for the differences between these peak scores and the average Lexington addict for each sex separately. The hypochondriasis scale was significant at p less than 0.05, and all other peak score differences were significant at p less than 0.005. Thus, from both diagnostic and psychological test data there is evidence that amphetamine abusers are different from other addicts. Patients drawn to use amphetamines are more sociopathic, and exhibit more eccentric and bizarre behavior.

DISCUSSION

From the above data, it is clear that many differences exist between amphetamine addicts and a general addict population, as well as between amphetamine psychotics and nonpsychotics. The most notable difference, and the one which provides the most significant clue to the solution to the questions posed in the introduction to this paper, lies in the psychiatric diagnosis of the individuals in the addict groups. It has been shown that antisocial and schizoid personalities, as well as schizophrenic reactions, constitute 60 per cent of the diagnosis of the patients addicted to amphetamines, a far higher percentage than was found in the general addict population.

Why should these individuals be drawn to amphetamines? There are several lines of evidence which suggest reasons why psychopaths prefer to use amphetamines rather than other drugs. Clinicians have reported some success with the administration of amphetamines in the treatment of psychopathic states and behavioral disorders, particularly those involving aggression, hyperactivity, and hypersexuality (Bradley & Bowen,[3] Hill,[11] and Hill & Watterson [12]). This success may be due to the initial calming effect described by the patients in this study. The paradoxical question of why a stimulant drug should produce a calming effect remains unanswered.

TABLE 7.—DIAGNOSTIC COMPARISON OF AMPHETAMINE ABUSERS AND GENERAL ADDICT SAMPLE

[In percent]

Diagnosis	Amphetamine abusers		General addict admission	
	Male	Female	Male	Female
Schizoid personality	40	13	14	3
Sociopathic personality	0	40	17	3
Psychotic diagnosis	[1] 20	26	0	7

[1] p less than 0.01.

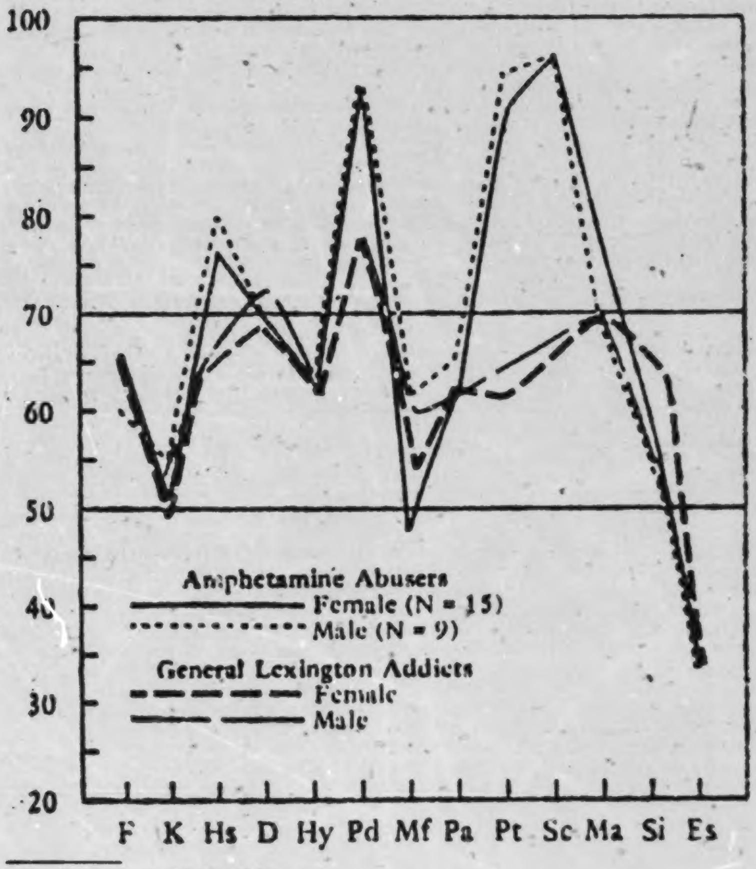
Psychopaths have been found to have an almost childlike capacity for novel stimulation. They seek it out. In fact, Quay [illegible] has explained psychopathic behavior in terms of the need for varied sensory input which leads to an extreme stimulus-seeking behavior. This continued search for new stimuli may stem from insufficiently internalized objects, schema and categories. Because he fails to internalize his experiences, the pschopath's ability to form a self-image is limited. He conditions poorly [14] and shows little anticipation of coming events either psychophysiologically or cognitively.[1] His poor conditioning performance applies to both avoidance and approach tasks, and he conditions best under partial reinforcement.[5] Fox and Lipper [9] found that psychopaths have significantly fewer spontaneous galvanic skin responses, which may be indicative of internal arousal. Mundy-Castle and McKiever [15] had already shown that subjects with few endogenous galvanic skin responses habituate rapidly to repetitive stimuli. In Pavlovian terminology this could be stated as a predominance of external inhibition and a relative lack of internal inhibition. Thus, the psychopath appears to have reduced internal mechanisms for nonspecific arousal and for retaining the emotional or conditioned significance of stimuli.

See footnotes at end of article.

Amphetamines may produce their paradoxical calming effect in these individuals by stimulating internal arousal mechanisms and, thereby, reducing the need for novel environmental stimuli. These arousal mechanisms become grossly hyperactive in the pychotic amphetamine abusers. The initial "organizing and energizing effect of amphetamines described by schizoid and schizophrenic patients may also be due to increased internal arousal, but this needs study. Whether certain schizophrenics and psychopaths have similar defects in their internal arousal and attention mechanisms is unclear, but such a finding would account for the preference for amphetamine noted in both the psychotic and nonpsychotic groups, between whom there are certain common features. Arieti [1] and others have noted that reactive schizophrenics often reconstitute at the psychopathic level. Histories of the schizoid and schizophrenic patients in his sudy cerainly were often remarkably similar to the patients diagnosed as pseudopsychopathic schizophrenics by Dunalf and Hoch.[4]

FIGURE 2

M.M.P.I. COMPOSITES OF AMPHETAMINE ABUSERS COMPARED WITH GENERAL LEXINGTON ADDICTS



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The separation between the psychotic group and nonpsychotic group of amphetamine addicts also rests primarily, though not entirely, on their psychiatric diagnoses upon their withdrawal from drugs. Patients who had developed the amphetamine psychosis were more often designated as schizoid or schizophrenic, while those who had not were found more often to be psychopathic. Other characteristics appeared to fit this pattern as well. Nonpsychotics tended to be more manipulative, identified with the aggressive parent and had more articulate memories. Psychotics were more passive, sensitive, fearful, felt inadequate and lethargic, were daydreamers and had visual memories. They tended to have been "loners" as children. Since five of the amphetamine psychotic patients continued to experience psychotic symptoms long after amphetamine withdrawal, an underlying psychotic process is indicated. It is unknown whether amphetamine contributed permanent effects to this psychotic process. Based upon the past histories of these five patients, it is the opinion of this investigator that amphetamine abuse was only a moderate contributing factor to this underlying psychotic process. It certainly was, however, the active catalyst in initiating the acute episode.

The amphetamine psychosis that was superimposed on the psychotic process that persisted beyond amphetamine withdrawal was qualitatively different from psychosis seen only with the drugs. As described previously, the amphetamine psychosis of the patients who were mentally clear after withdrawal was less bizarre than those of patients with an underlying psychotic process: their delusions and hallucinations were more reality-oriented. In these relatively more stable patients, the amphetamine psychosis was contiguous with the amphetamine use.

SUMMARY

A detailed behavioral description of amphetamine psychosis is presented. The usual paranoid psychosis is noted and some of the behavioral sequences leading to the psychosis are presented. Vision is the primary sensory mode in hallucinations, thinking disorders and body schema distortions. Vision is also prominent in an affinity for visuoconstructive tasks and in the ubiquitous feeling of being watched. Objects and events take on heightened emotional significance. There is a concern with inner workings and analysis of details, clues and signs. Philosophical excursions are noted often along with a general attempt to add up details in order to see the larger picture. Disorders of recognition are frequent, especially false recognition of faces. Faces are quite often distorted both on others and the patient. Body schema distortions were also frequent. Fear and terror are more prominent than depression. Sexual fantacies become elaborate, and there is a marked increase in libido and polymorphous sexual activity in many.

It was noted that amphetamine addicts differ from their fellow addicts on several variables: (1) they have a higher incidence of antisocial, schizoid and paranoid personalities; (2) they also have proportionately more schizophrenic reactions; and, (3) their Minnesota Multiphasic Personality Inventory profiles are significantly different. Psychosis, triggered by amphetamine abuse, appeared more often in the schizoid group than in the antisocial group. The mean amphetamine dose level was greater in the group of patients who developed psychosis than the group which did not.

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APPENDIX 7

AMPHETAMINE PSYCHOSIS: THEORETICAL IMPLICATIONS

(By E. H. Ellinwood, Jr., M.D.)

(Journal of Psychedelic Drugs, pp. 52–59, Volume 2, No. 2, Spring, 1969)

In a previous paper,[11] a detailed description was presented of the amphetamine psychosis based upon the histories of amphetamine addicts who were questioned extensively about manifested symptoms when taking large amounts of amphetamine. Several symptoms and behavioral antecedents of the amphetamine psychosis were intriguing, but have not been given emphasis in the literature. The present paper will attempt to explore the possible mechanisms in this psychosis, bearing in mind certain symptom complexes. Three groups of symptoms of that present in the amphetamine psychosis appear related to hyperexcitability of: (1) the limbic system including the temporal lobe (e.g., polymorphous hypersexuality, deja vu, fear and defense responses, olfactory hallucinations, extreme curiosity and examination and contralateral touching and picking habits), (2) minor hemispheric temporoparietal areas (e.g., false facial recognition, facial distortions and persistent concern with visuoconstructive activities), (3) unilateral or contraversive attention mechanisms that mediate reaction to peripheral stimuli (e.g., overreaction to auditory and visual stimuli in the lateral periphery, defense and fear reactions evoked by these peripheral stimuli and constant dread or vague awareness that someone or something is present just outside the border of their peripheral vision).

At this point the author would like to present a brief theoretical framework that will attempt to explain the presence of all three symptom complexes in the amphetamine psychosis. Later a more detailed discussion of the amphetamine psychosis symptomatology and of the theoretical framework will be taken up.

This hypothesis is based upon the action of unilateral attention mechanisms governed by visuopostural reflexes that course up and down the central nervous system. These visuovestibular mechanisms, especially the tonic neck and conjugate eye reflexes, direct attention contralaterally when an unknown auditory or visual stimulus appears in the periphery and are part of systems regulating orienting and rapid recognition responses. Tonic neck reflexes which are closely associated with the limbic system, and, with conjugate eye movements, are stimulated in many areas of the limbic system especially the amygdala, hippocampus and cingulate gyrus. The limbic component of unilateral attention may regulate the emotional coloring of recognition. Fear and defense reactions are commonly evoked by a higher voltage from the same stimulation points that evoke unilateral attention. Limbic appetative mechanisms such as curiosity and sexual exploration also may be related to these systems.

In the cortex there are also visuovestibular representations, especially at the temporo-parietal junction. Contralateral head and eye turning is stimulated in several cortical areas that are closely associated with the limbic system, thus

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See footnotes at end of article.

the cortex appears to have representation in this unilateral attention system. Attention to one side is mainly subserved by the contralateral cortex. From split brain studies in lower animals it appears that both hemispheres have independent and equal attentive and emotive mechanisms. It can be assumed that the unilateral attention systems not only direct attention in the environment, but also take part in regulating attention between the two hemispheres. In man the gradient of attention appears overbalanced in favor of the dominant cortex, but is probably still dependent on the neutral substrates of the tonic neck systems for mutual regulation of attention. The amphetamine psychosis presents certain symptoms referable to the minor hemisphere. Many schizophrenics show disorders of visuopostural mechanisms, and it has been noted that borderline schizophrenics and schizoids develop the amphetamine psychosis. Amphetamines stimulate postural reflexes and may thereby amplify any disorder already present. A shift in the gradient of attention to the minor side could be taking place in the amphetamine psychosis and could be causually related to the psychosis.

Using this theoretical framework, one can explain the simultaneous production of the three symptom complexes presented earlier. Although totally untested, this framework may be useful to the reader in ordering the amphetamine psychosis symptoms discussed below.

DISCUSSION

The symptomatology of the amphetamine psychosis has been found to be strikingly similar to that of the psychosis associated with temporal lobe epilepsy. Complex visual hallucinations, olfactory hallucinations, depersonalization, estrangement, deja vu, "ideas of a presence" and gritting of the teeth are presented in both syndromes. Temporal lobe symptoms, however, are not present in amphetamine addicts after drug withdrawal. This is similar to the depersonalization syndrome recently described by Roth,[illegible] Davison,[9] and others,[illegible] which also presents with the above temporal lobe symptoms, though no organic signs can be demonstrated.

Several authors (including Hill,[illegible] Pond,[illegible] Slater and Beard,[illegible] and Goldstone[17]) have described the paranoid psychosis associated with temporal lobe epilepsy, although others[illegible] report that the psychosis is found with equal frequency in other forms of epilepsy. This syndrome includes paranoid ideas, ideas of influence, auditory hallucinations and thought disorders. Deterioration is less common than in schizophrenia, the affect tends to remain warm and appropriate, and paranoid ideas are often colored with religiosity. Small *et al.*[illegible] however, have presented evidence that these symptoms are also noted in other forms of epilepsy. The most extensive description of the symptomatology of the epileptic psychoses (mainly temporal lobe) was made by Slater and Beard in 1963.[illegible] Several vignettes drawn from their 67 patients illustrate the religiosity, primary delusional experience and revelations which were also found in the amphetamine psychosis. One patient stated, "I had two thoughts side by side," and then he realized the untruth of Christianity. Apocalyptic visionary experiences were reported as that instant coming when everything made sense. The special significance attached to signs and objects was also noted. There were statements, such as "it all falls into a pattern," "things have some kind of connection," "people's Christian names have a significance," "everything has a double meaning—it's very difficult." The heightened significance of thought, insight, the meaning of signs, along with an intense philosophical concern (including cosmic consciousness, mystical and "eureka experiences") reported by amphetamine abusers is almost identical to the above excerpts.[11] In the amphetamine psychosis philosophical concern appeared to evolve out of a heightened awareness and significance of common objects in the environment. Objects would be noted in minute detail, would suddenly represent the meaning of everything, or they would have an evil, strange, sexual or familiar appearance. It is currently thought that the emotional elaboration of images is a function of temporal lobe areas. Irritative lesions of the temporal lobe and certain psychotomimetics would appear to distort these functions

The Slater and Beard report,[illegible] in relating derealization experiences, presents several statements about faces—"her father was not her father, had lines on his face, her mother was wearing a mask, her clothes were not her own." The doctor is not the doctor but the devil, people in the street look like foreigners, everybody dressing up in pantomime." Roth[44] also presents descriptions of distorted faces reported by patients with the depersonalization syndrome which are not unlike those noted in the amphetamine psychosis. False recognition of faces as seen in the amphetamine psychosis is not reported as a common symptom in temporal lobe epilepsy or the depersonalization syndrome. However, Milner[38] reported right temporal lobectomy patients are defective in facial recognition. Agnosia for faces (prosopagnosia) is usually found with a lesion of the minor occipital lobe (Hecaen and Angelergues,[19]). These patients cannot recognize family, friends or themselves by physiognomy. Even pictures of persons present are frequently not recognised. The impairment in recognition may extend to animals, and frequently revisualization is disturbed. There is a paroxysmal form of the disease (migraine and epilepsy) in which faces are warped, torn, distorted. The systems ablated in facial agnosia may well be the same that are over stimulated in the amphetamine psychosis. Bodamer,[5] considering recognition of faces to be a quite primitive ability which preceded the recognition of objects, pointed out that in incomplete prosopagnosia attention was levied on the "ocula." Athrens[2] noted increased cathexis of eye area by infants. Hypercathexis of faces, especially of eyes, the primary area of individual recognition, was noted in the amphetamine psychosis.

Depersonalization and estrangement experience are basic symptoms in temporal lobe epilepsy. Mullan and Penfield[39] elicited both these experiences and also deja vu with stimulation of the temporal areas mainly on the right side. Estrangement experiences were usually described by amphetamine abusers as events that seemed strange, uncanny, peculiar and queer, and that things, events and people appeared different or foreign. An increase in deja vu was also noted in the early stages of the amphetamine psychosis. The sense of familiarity in deja vu is like the emotional counterpart of recognition and the assimilation of present experiences into past categories. Jamais vu emotive experiences may occur when one is unable for various reasons to find a framework for the present experience. Thus, deja vu and jamais vu may be associated with orienting and recognition.

The orienting response is succeeded by recognition of the new but familiar and assimilation of this perception into variously significant categories or by nonrecognition of the strange, different or uncanny. The unplaceable object may stimulate avoidance and fear. It may also stimulate curiosity and a search for new categories and significance, or attempts to expand, change and distort the categories or unknown object for mutual reconciliation. In the amphetamine psychosis, there was an incessant attempt to add up all the details past and present, a search for significance, and a striving for universals to explain the uncanny "mystery." Heightened awareness is readily notable in this syndrome, but the most notable theme is recognition and/or search. Recognition attributes stand out in false facial recognition, deja vu, estrangement and the frequent attempts to recognize objects in the peripheral vision. There were common recognition images in the amphetamine psychosis that are noted as illusions or hallucinations in toxic organic states. Snakes, microanimals, spiders, figures and faces presumably are inborn recognition images in man. They are not unlike the so-called innate fear release mechanism in naive monkeys toward snakes. It can be argued that these images are but elaborations of more basic visual perceptual units such as spirals, dots, radiating lines and ovals, but it is the snake and micromammals that elicit recognition with emotional significance. It is not this contingent of recognition, the emotional interpretation of the present experience contrasted against past analysis, that is so hyperative in the amphetamine psychosis. Distortions follow the hyperactivity; normally bland experiences became fearful, and neutral objects take on an evil cast.

The disturbance may also reflect an inability to recover the past, categories or standards. Goldstone[11] states, "Subjects influenced by lysergic and diethylamide have difficulty in locating concepts. Their judgments of conceptual standards are characterized by increased variability and their judgment processes are accompanied by long pauses during which time subjects report an intense search for the appropriate standard. This would appear to reflect a disruption in concept availability involving oscillating losses of the appropriate frame of reference." The development of a concrete attitude in the amphetamine psychosis is paradoxical since the comparison apparatus appears to be so stimulated. The oscillatory state of this comparison system is probably the cause of this. The realistic perceptual present, quite blind and binding, is interspersed with sudden intuitive and most incorrect abstractions and insights. In this connection, animals with

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See footnotes at end of article.

amygdala lesions react even to familiar objects with curiosity and oral exploration. Past standards for aggression, as well as for food and sexual objects, appear unrecoverable and consumption of bizarre objects is noted. For example the classical temporal lobe ablated Kluver-Bucy monkeys were tame, curious, constantly searching, hypersexual and polymorphous perverts.

The critical lesion of the medical temporal lobe region apparently is in the amygdala or pyriform cortex (*Green et al.*[13] and MacLean [20]). MacLean has proposed that the amygdala and its projections subserve preservation of the individual since stimulation elicits patterns of behavior that are related to alimentary functions or fighting and defense. He further points out that the evocation of bizarre hypersexuality in the Kluver-Bucy syndrome apparently is due to release of the hippocampus and septal region from restraint.[21] Stimulation in these latter areas is frequently followed by enhanced pleasure, grooming reactions, and sometimes penile erection. This curiosity and hypersexuality are two of the most notable features in the amphetamine psychosis.[11] Curiosity and hypersexuality, as well as oral behavior, may be part of approach and exploration systems that are under restraint of the amygdala and frontotemporal area. The interesting automatism of contralateral searching in temporal lobe epilepsy has yet to be explained. Similar to this is the hand-face touching and picking in amphetamine psychosis. The hand searching the contralateral side of the body is not searching clothes—one would doubt that a primitive automatism would be dealing with such a civilized item as clothes—but must be searching on the body. Could this be a partial grooming reaction which is primarily directed toward hair matting and microanimals as in lower primates? Patterns similar to grooming reactions, such as picking at microanimals, digging at encysted ones and incessant facial picking, are common in the amphetamine psychosis.

What is the nature of the polymorphous hypersexuality in the amphetamine psychosis? MacLean [20] has drawn attention to the primitive nature of the limbic system which interprets experience largely in terms of feeling. He suggests ". . . that the crudity of the analyzing mechanism and the overlapping incoming impressions from the nose, mouth, viscera, sex organs eye ear and body wall might account for the often seemingly paradoxical overlapping of affective reactions such as those associated with orality and sexuality . . ." An alternate explanation of the polymorphous hypersexuality may be that those alienated from their past experience and object categories might frequently seek initimate relationships with even sexually undifferentiated objects (regression) "to fill the void." This would fit in with reports of "desire just to physically be close to someone for hours," which was not unlike oceanic feelings. Thus, in the amphetamine psychosis, the undifferentiated sexual object was more noticeable than a well-defined homosexual object.

If the sexual object is undifferentiated, why should many persecution delusions in males of this study involve explicit homosexual accusations? Many paranoid individuals have difficulty with dominance-submission relationships. Visual sexual signs play a preeminent role in the assertion of primate dominance. MacLean [21] speaks of this in describing how vision is all-important to monkeys especially when considering sexual and aggressive display. Penile display is the expression for both and has the same order of dominance in certain monkeys as pecking order in chickens. MacLean says, "There are other considerations that lead one to wonder if penile display does not generalize to the eye so that the mere act of one animal's looking into the eyes of another becomes in itself an aggressive act. Some monkeys, such as the macaque, seem in general to try to avoid looking each other in the eye or indeed people, in the eye. If one looks the macaque in the eye, he will charge. In this connection it in interesting to recall that looking in the eye spells panic to some patients and particularly some schizophrenic patients." The amphetamine psychotics described eye avoidance; the critical feature being to see others without being seen. Men were especially prone to spy on others while hidden. Even at the time of the interview, these patients had no clear cut idea of their motivation for spying. They would allude first to the scoptophillic, voyeuristic aspect and then to the secret aggressiveness. It was, conversely, quite common for patients to describe their body image only in visual terms and to state their belief that people could look right through them, especially with eye contact. They felt weak, impotent, and ineffectual when others were looking and were afraid that others would see homosexual traits in them. On other occasions, however, sexual promenade and display apparently is evoked in the amphetamine psychosis.

The visual mode was predominant in the amphetamine psychosis. Visual imagery was heightened and there was a pictorial quality to thought. One visual pattern was the patients' proclivity for visuoconstructive tasks, which took the form of dismantling watches, radios, etc., reading blueprints, and analyzing objects and space for their makeup pattern, and "3–D characteristics." Even their language reflected the visuoconstructive attitude (e.g., "putting things together to get the large picture," "placing the details in their place"). Visuospatial and visuoconstructive defects are prominent symptoms of lesions involving the temporoparietal junction of the minor hemisphere (Hecaen *et al.*,[illegible] Hecaen,[illegible] McFie & Zangwill,[illegible] and Patterson & Zangill [illegible]). This would lead one to seek further symptoms of amphetamine psychosis that might be functions of the lesser hemisphere. As mentioned earlier, the false facial recognition is probably due to stimulation of the same areas that are related to the facial agnosia in minor hemisophere lesions. Reviews by Milner [illegible] and Piercy [illegible] summarized the effects on intellectual function of temporoparietal lesions in the nondominant hemisphere. Unilateral neglect of body and space, hemidepersonalization, visuoconstructive agnosia, apraxia for dressing, and loss of topographic memory are the primary symptoms. Specific tests that are performed inadequately by patients with these lesions are porteus maze, map drawing and block design, as well as the McGill Picture Anomaly and the Wechsler arrangement both of which involve complex picture material dealing with everyday social situations.[illegible] The McGill Picture Anomaly test is specific for right temporal lobe lesions and tests the ability to see the picture as a meaningful whole scene in which the separate objects are only parts, the task being to pick out the one incongruous object. Milner [illegible] states, "It seems that the deficit appears when attention has to be given to many aspects of a complex picture or when different pictures have to be arranged in a meaningful order on the basis of slight differences in detail "Statements by patients in this study (e.g., "I could see everything at once when reading blueprints" and "I looked for days for elusive clues or signs") sound much like an amplification of the quality described by Milner.

Several investigators (Hecaen,[illegible] Mullan & Penfield,[illegible] and Tueber *et al.*[illegible]) report that visual fits are localized predominantly in the right occipital or temporal lobes. These seizures commence either with visual manifestations (e.g., hallucinations) or are entirely confined to the visual sphere. Mullan and Penfield noted visual illusions not only with epileptic auras from right-sided foci, but also from stimulation of the right cortex. These were visual illusions of speed, dimension and perceptual intensity. Auditory illusions were produced from bilateral stimulation. Deja vu is reported to have been observed namely in right temporal lobe lesions (Cole & Zangwill,[7] Hecaen,[21] and Mullan & Penfield [illegible]). Difficulties in appreciating time, particularly with a shotrening of time, also are described as a rightside function (Hecaen,[21] and Mullan & Penfield[illegible]). These symptoms are also prominent in amphetamine psychosis,[11] however hemidepersonalization, a frequent symptom of right side lesions, was noted in only four of the amphetamine psychotics.

Negative findings are also reported. Slater and Beard [illegible] found no lateralization prominent either in psychosis or symptoms in their epilepsy study. Hecaen [illegible] insists that, from their large collection of patients in disturbances of activities of synthesis (such as the personality disturbances derived from cerebral lesions) no differences were found between right and left side lesions. They could find no differences of frequency or quality in the psychical disorders according to lesion site except for a significantly greater percentage of euphoric, indifferent or denial reactions on the right side and catastropic reactions on the left. Others [illegible] have reported similar findings following Amytal injections into the right and left carotid arteries. Indifference and denial are, of course, the qualities seen in hemiasomatognosia, anosognosia and and neglect of one-half extracorporeal space.

A question can be raised as to the nature of this organic denial, namely whether it presents elementary paradigms of cerebral programming, and whether it offers any further explanation of the amphetamine psychosis. Denny-Brown [10] has demonstrated in both man and monkey that temporoparietal lesions regularly present release symptoms, namely the postural changes he calls avoiding and labyrinthine symptoms. The avoiding represents an adversive turning from the side of the lesions, or, conversely, a turning to the contralateral side. Avoiding probably has its basis in postural reflexes similar to the tonic neck reflex. Gessel [illegible] has repeatedly pointed out that the tonic neck reflex (T.N.R.) is the first reflex or complex movement to show laterality preference and apparently was

See footnotes at end of article.

the scaffolding around which prehension and cerebral dominance developed. Postural control of head and eyes is an important feature of these patterns. Unilateral regard or attending must be viewed against a background of the contralateral neglect, inattention, inhibition or adverse turning. Concurrently, attention is primarily focused in one hemisphere and moderately inhibited in the other. The T.N.R. is also similar in several respects to the orienting reflex in which, among its many manifestations is noted the turning toward a novel stimulus, with the orientation of eyes, head and body. The T.N.R. is but one of postural reflexes on which orienting responses and attention are oragnized and is especially concerned with unilateral attention.

As was noted in the introduction, unilateral attention mechanisms were hyperexcitable in patients taking large amounts of amphetamine. They were hyperalert to peripheral stimuli which frequently evoked a gross fear reaction. Hallucinations and illusions initially appeared only in the peripheral vision. One of the most ubiquitous symptoms was the constant notion that something was beside them (a presence). Although it is generally agreed that disorders of attention and awareness are involved in hallucinatory states, little is known of the varieties of attention or the systems subserving them. Since manifestations of unilateral attention were so pronounced in the amphetamine psychosis, the author would like to pursue the attention mechanisms represented by the T.N.R. further.

The T.N.R. sets up a unilateral regard especially in visuomotor attention. A six-week-old infant regards movement in the peripheral field of the extensor side, but takes no notice of similar stimuli on the flexor side.[16] Although at this age the T.N.R. and contralateral attention are probably represented anatomically no higher than the pallidum, the cortex later manifests considerable control of movements associated with contralateral attention.[9] At sixteen weeks an infant is bidextrous, tends to move his arms in unison and makes bimanual approaches, and regards stimuli in both visual fields. The patterns of unilateral and bilateral attention appear from behavioral observation to be refined at successive stages of development. In animals, destructive lesions and stimulation at successive levels in the central nervous system also demonstrate evolving unilateral attentive mechanisms,[13] in contrast to the generalized alerting from midline reticular and thalamic systems. Contraversive turning is evoked by stimulation of extra-pyramidal, limbic (Anand & Dua,[1] Bender & Shanzer,[4] Gabor & Peele,[16] Kaada,[27] and MacLean [33]) and certain cortical areas (Anand & Dua,[1] and Crosby *et al.*).[8]

On the basis of stimulation of wide cerebral areas in the cat, Flangel and Kaada[13] suggested that alertness and contralateral head turning are parts of a behavioral attention response. They noted that many cortical areas (especially area 24) presenting these responses are related to the limitrophic type of associational cortex. It is also notable that the orienting reflex has been linked to the hippocampus and possibly other areas of the archicortex. Together with characteristic aroused electro-encephalographic patterns, the orienting reaction is invariably associated with head and eye deviation. At the cortical level, other mechanisms may be also involved in regulating unilateral and bilateral attention processes. By varying the frequency of stimulation across the corpus callosum, Jung [26] achieved both facilitation and inhibition of the opposite cortex. A critical unanswered question is whether both hemispheres are simultaneously attending, alternating attention or whether one hemisphere controls the bilateral approach. The early scaffolding of attention has a direct bearing on the later complex vicissitudes of attention. Since at present the attentional relationships between the two hemispheres in the child, as well as in the adult, are essentially unknown, the author would like to propose a hypothetical model.

The main control of attention at any moment in time probably resides in one hemisphere. With development, the major hemisphere increases its gradient of control, although the non-leading hemisphere may maintain a background attention and at times take a partial lead. This would involve a simultaneous attending to the sequential details and the verbal articulate program while at the same time maintaining a dim awareness of more global but necessary background visual and emotional material in the minor hemisphere. With recognition and visuoconstructive problems, the minor hemisphere lesions, the attending process is further overbalanced to the major side with a concurrent avoiding of the side contralateral to the lesion, or, in Denny-Brown's terms,[10] the postural reflex (T.N.R.) has been released. The preponderance of indifference, denial and avoidance in the somatognosia and anosognosia syndromes may offer insight into these psychological processes.

With unilateral loss of sensation or motor function due to lesions in the right hemisphere, there may be a perceptual flooding of the centers in the left hemisphere that conserve bilateral body schema. This rush of perceptual information concerning the loss of function is in overt conflict with the body schema. Cognitive or perceptual dissonance possibly also potentiates the attentional shift to the left hemisphere and resolves the conflict by denying the left side. Thus, the bilateral body schema is preserved. This concept that "discrepant sets of associates do not neutralize each other or mix and make a blur" is expressed in James'[illegible] "Law of Figured Consciousness." Hemispheric inhibition may also be one of the ways repression and denial function under ordinary circumstances. Thus, the minor hemisphere complements, alternates with and enlarges upon major hemisphere function, except at moments of cognitive dissonance or conflict when repression or denial resolves the conflict. In this connection it could be noted that conversion reaction is the par excellence example of denial and indifference. Neurophysiological substrates must underlie the attentional patterns present in this disorder. Unilateral attention mechanisms and the gradient to the left hemisphere may relate to many hysterical disturbances of sensibility, since as Schiller[47] pointed out, most of these lie on the left side of the body.

How does one explain the amphetamine psychosis and its tendency toward hyperactivity of minor hemisphere functions? Righting and postural reflexes are facilitated by amphetamine (Macht,[30] and Maling & Acheson[31]). If the tonic reflex systems are stimulated by amphetamines, one would expect either that the gradient of attention will be directed even more to the left hemisphere or that an indiscriminant stimulation of both hemispheres will result. With initial low doses, amphetamine users noted clarity and preciseness in their thinking, and they became much more loquacious. In the psychotics, both major and minor temporal lobes may be stimulated for longer intervals without the clearcut dominance of the major lobe or with frequent alternation between the two. Therefore, there are many symptoms referable to the minor hemisphere and its prolonged stimulation without counterreference from the major hemisphere. Another possibility is that in psychosis-prone individuals amphetamine stimulates an already defective cortical attention regulating mechanism.

It was reported previously that many of the patients who developed the amphetamine psychosis were either schizoid or schizophrenic.[11] Why should these individuals be susceptible? Bender[3] has emphasized that schizophrenic children frequently show lack of integration or repression of the tonic neck reflex even as late as seven years of age. There is much evidence that visuopotural reflexes are disturbed in many schizophrenics and that this is accompanied by abnormal ocular deviation responses; there is also much evidence that similar disturbances are noted in temporoparietal lesions. Lowenbach[28] repeatedly observed caloric nystagmus responses in thirty of Gjessing's cases of periodic catatonia and found that shortly before and during periods of stupor the vestibular reactivity diminished and sometimes only slow deviations were elicited. Fitzgerald and Stengel[12] studying a composite of schizophrenics noted the diminished response in some and also directional preponderance (mainly to the left). Direction preponderance is usually seen in unilateral temporal and parietal lobe disease. Both these caloric studies found ocular deviation in the direction of the slow phase. It was further noted by Fitzgerald and Stengel that such deviation secondary to caloric stimulation occurs in unconsciousness and semiconsciousness and is thought due to cortical depression.

Other visuopostural disturbances found in both parietal lesions and in certain schizophrenics are spontaneous turning around the longitudinal axis[illegible] and difficulty in aligning a rod to the vertical while seated in a tilted chair.[illegible] As previously presented these visuopostural systems take part in regulating unilateral attention and are often mutually inhibitory. With stimulation by amphetamine in large amounts, any disturbance in the mutual regulations of right and left attention systems may result in a shift in the gradient of attention of the minor hemisphere.

Stimulation of the unilateral attention systems would help also in explaining why patients when addicted to amphetamine were so hyperalert and reactive to stimuli in their peripheral vision.[11] These unilateral attention systems are probably used for fast recognition in the peripheral visual fields. An animal or person turns quickly and without conscious effort to unknown auditory or visual stimuli. Danger especially requires fast recognition, and thus these controversive visuopostural systems are not only associated with orientation but also with fear and defense reactions as Flangel and Kaada[13] have demonstrated so well in

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See footnotes at end of article.

animals. The fear component is extremely prominent in the amphetamine psychosis and most patients reported repeated incidences of terror in response to peripheral stimuli.[11]

It should be reiterated that the above model of unilateral attention is a possible explanation for but one of the specific systems that are set into action at various levels of arousal. There is a need for further dissection of the varieties of attention and levels of arousal, especially as they relate to psychotic states. It would be productive to take a fresh look at our psychiatric syndromes by detailed description either from a phenomenological basis or with an eye sharpened by our present knowledge of neurophysiology. Nature and society perform certain experiments that we cannot. In the case of amphetamine abusers, it was previously demonstrated that specific types of persons are drawn to use amphetamines, and that only certain persons develop a psychosis.[11] The development of this chemical psychosis occurs over time and is not laboratory set dependent. A focus on behavioral antecedents and sequences can also afford some insight into this paranoid psychosis.

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APPENDIX 8

INTRODUCTION TO AMPHETAMINE ABUSE

(By John C. Kramer, M.D.)

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Stimulants have been used for centuries if not millenia. Xanthine bearing plants are used by a majority of mankind, and produce a dependency which does not usually interfere, and may, in fact, enhance the efficiency of the users.

In a separate category, the juices of coca leaves have provided a sense of well-being and endurance to Andean Indians since before the Conquistadors. Less well known, the fresh leaves of the Khat[1] plant have been chewed in East Africa and the Near East for centuries. If the followers of Al Hasan used any drug to enhance their appetite for assassination and battle, one might speculate that they used Khat rather than Cannabis. When taken in the leafy form, though both coca and Khat may produce a dependency clearly detrimental to the user, it often does not. Extracted from the plant, cocaine is much more likely to create a damaging dependency, as are phenethylamines (amphetamines in this report), the synthetic equivalents of Khat.

Among the synthetic stimulants, amphetamine itself was first prepared in 1887 by Edeleano and methamphetamine in 1919 by Ogata,[2] but it was not until 1927 that the psychopharmacological effects of amphetamine were first described by Alles. From the 1930's through the 1950's, medical use of amphetamine became extensive and it was looked upon as a useful and relatively safe agent though some toxic effects and some tendencies to produce dependence were described.[3] As recently as 1963[4] the AMA Council on Drugs, while recognizing the great potential for abuse of amphetamines, stated that "at this time, compulsive abuse of the amphetamines [constitutes] a small problem [in the United States]." By 1966 concern was greater. In that year the AMA Committee on Alcoholism and Addiction and the AMA Council on Mental Health[5] took note of the information that sufficient amphetamine products were available in the United States to supply 25 to 50 doses to every man, woman and child in the country. In 1966 Griffith[6] and Lemere[7] further warned of the extent and dangers of amphetamine use and in 1967 Kramer[8] described the pattern and effects of high dose intravenous use.

PATTERN OF USE

Though regular, oral use of amphetamines may cause difficulties, including paranoid psychosis and a disabling dependence, it is less likely to lead to these effects than intravenous use. Colonies of intravenous stimulant users have gathered in such areas as San Francisco, New York, Los Angeles, and elsewhere. At present the development history of the intravenous amphetamine user is typical enough to warrant a general description.

He has tried amphetamines orally, he may have liked them or not. He has used other drugs perhaps moderately, perhaps extensively, and he has been moving either in marijuana-psychedelic drug-using circles or in heroin-addict circles. His first intravenous use of amphetamine is an ecstatic experience and his first thought is "where has this been all my life." The experience somehow differs from the effects of oral amphetamines not only quantitatively but also qualitatively. Early his use of the drug is intermittent, doses probably equivalent to twenty to forty milligrams per injection may be taken once or a very few times over a day or two. Days or weeks may intervene between sprees. Gradually the sprees become longer and the intervening periods shorter; doses become high and injections more frequent.

After a period of several months, the final pattern is reached in which the user (now called a *speed-freak*) injects the drug many times a day, each dose in the hundreds of milligrams, and remains awake continuously for three to six days getting gradually more tense, tremulous and paranoid as the "run"

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progresses. The runs are interrupted by bouts of very profound sleep (called "crashing") which last a day or two. Shortly after waking after crashing, the drug is again injected and a new run starts. The periods of continuous wakefulness may be prolonged to weeks if the user attempts to sleep even as little as an hour a day.

Though amphetamine used intravenously is a powerful reinforcer, there are individuals who have tried it once or several times and have chosen not to continue. Nevertheless, like heroin or cocaine, it is a form of drug use which may overwhelm even a casual dabbler.

It is interesting to note that in experiments[9,10] in which rats had the opportunity for self-injection of amphetamines intravenously, the drug proved to be strongly reinforcing and the self-administration was characterized by periods of intake and abstinence entirely analogous to that seen in human amphetamine users.

EFFECTS

The intravenous use of amphetamines produces a syndrome with a variety of behavioral and physical effects some of which, particularly insomnia and anorexia, may themselves produce symptoms or alter the effects specifically attributable to the drug. The high dose user thus is not merely responding to a drug, but also to altered sleep patterns, to undernourishment, to malnourishment, and often to infection. And amphetamines are seldom, if ever, used exclusively: "downers"—opiates, phenothiazines and sedatives—are regularly used, as is cannabis and occasionally psychedelics. A surprising miscellany of other substances may be used experimentally and the "speed" itself is seldom pure and probably contains by-products not extracted during illicit manufacture, as well as those added afterward to "cut" the product.

The Flash and the Euphoria.—A few seconds following the injection, the user experiences a sudden, intense generalized sensation which has both physiological and psychological characteristics. It is ineffable and ecstatic yet may differ in intensity and quality of flash and because the pure, commercially produced products do not give a good flash, it seems likely that the flash may to a great extent depend upon substances other than the methamphetamine.

The euphoria can be viewed as having both primary and secondary characteristics. Part of the sense of well-being seems purely internal and part stems from the feelings of ability and of invulnerability which are produced. Suddenly, magically, volubility and gregariousness appear and boredom departs.

These desired effects are extremely vulnerable to the impingement of tolerance. It takes ever more drugs to re-create this chemical nirvana. It is the desire to re-experience the flash and the desire to remain euphoric, and to avoid the fatigue and the depression of the "coming down" which drives the users to persist and necessarily to increase their dose and frequency of injection. And it is this persistence of use and these large doses which bring on all the other effects of these drugs.

Anorexia.—One of the medical uses of amphetamines is to induce anorexia to aid in weight reduction. In doses ordinarily prescribed, five to thirty milligrams per day, the anorexia produced is moderate and some have questioned whether a placebo effect is responsible rather than a drug effect. With the large doses taken during abusive use, there is no question but that anorexia is produced. Users uniformly lose weight during periods of abuse. Appetite suppression may be so profound that users may find the very act of swallowing difficult. Some users diligently force themselves to take small amounts of highly nutritious foods or inject themselves with vitamins and other dietary supplements.

Upon arising from the profound sleep which follows a run, either immediately or perhaps a few hours later, the user becomes voraciously hungry. Though he has eaten little or nothing for several days, bulimia like this seems to be related to release from the drug effects in large measure, because in the instance of non-drug assisted starvation, appetite is diminished after several days starvation. Undernutrition and malnutrition result and undoubtedly complicate all the other effects of high dose amphetamine use.

In an unpublished study[12] Seevers, Gantz and Deneau found in monkeys given high doses chronically that as the dose was raised past 32 mg./kg. per day the animals became polyphagic rather than anorexic, but continued to lose weight though eating more than three times their usual daily ration.

Insomnia.—Even early in this pattern of drug abuse the users remain awake for a day or two at a time. These periods gradually become longer so that the runs tend to last three to six days. Though longer runs have been reported, they are generally isolated events. Some users will force themselves to lie down, close their eyes and drift into a half-sleep for perhaps an hour or two. With this the user may be able to persist in a run for several weeks before crashing.

There is no question but that sleep deprivation (or perhaps dream deprivation) alone can produce deterioration in performance, misperceptions, hallucinations and other phenomena. All these occurred in one sleep deprivation experiment,[11] but it was the impression of Pasnau *et al.*, that withholding all stimulants from their subjects during the eight-and-one-half days of wakefulness, permitted the subjects to cope better with these effects.

It is likely that both the insomnia and the drug contribute to the syndrome, and as with other aspects of this phenomenon, are inextricably intertwined. The observation that many of the physical and psychological symptoms are largely dissipated after sleeping for a day or two suggests that the insomnia alone is a major contributor to the syndrome. The fact that some symptoms persist after weeks or months of abstinence indicates that sleep deprivation is not alone responsible.

Considering that the usual pattern seen during well established high dose abuse is of three to six days of wakefulness followed by one to two days of sleep, then users spend about one-fourth of their time in sleep, about the same proportion as non-users only distributed differently. Whether the REM time is different has not been investigated and may be of consequence even if the total sleeping time of users equals that of non-users.

Tolerance develops to many of the effects of amphetamine, including that of producing wakefulness. When drug use is well developed very large doses will be necessary to keep the user awake. At times when tremulousness develops after several days of wakefulness, users describe taking a moderate dose of their drug to calm them sufficiently so that they can relax and sleep. A "moderate" dose in this instance may be as much as several score milligrams.

Paranoia.—A paranoid psychosis can be precipitated by either a single large dose or by chronic moderate doses of amphetamines. Two surveys of patients entering psychiatric units have suggested that amphetamines may be causal or at least a precipitating event in the psychiatric hospitalization of patients not otherwise identified as users of amphetamines.[13, 14] The presenting symptoms are those of paranoid psychosis.

High dose intravenous users of amphetamines generally accept that they will sooner or later experience paranoia. Aware of this, they are usually able to discount for it. Moderate persecutory ideas and visual illusions will seldom be acted on because of their intellectual awareness of their nature and origin. However, when drug use has become very intense or toward the end of a long run, even a well practiced intellectual awareness may fail and the user may respond to his delusional system.

Leake[15] has suggested in the past and Ellinwood[16, 17] more recently, that the effect of amphetamine is to release underlying psychotic trends. Griffith, Cavanaugh and Oates[18] however, precipitated a paranois psychosis in all four subjects given d-amphetamine (120–220 mg. per day for 24–120 hours) inciting psychosis. All had previously been diagnosed as having a moderate personality disorder.

Though there may be inividual differences iin sensitivity to the psychotogenic effects of amphetamines, it appears that anyone given a large enough dose for a long enough time will become psychotic. Though this hypothesis may be untestable, given the experiences of a large number of high dose amphetamine users, it seems likely, more so than the view that psychosis is precipitated only in those already so inclined.

As mentioned earlier, the paranoia does not usually start during the first few months of high dose intravenous use. When it does finally begin, it is mild, easily controlled and is largely dissipated upon waking after crashing and it usually does not start again until after two or three days on a new run. As time goes on, it may start earlier in a run an may persist to some extent even after crashing. In some instances, the first injection after a period of sleep will bring about a return of the paranoia. Once an individual has experienced amphetamine paranoia, it will rather readily return even after a prolonged period of abstinence.

Violence.—Public concern over use of psychoactive drugs often centers on the assumption that among the effects of a specific drug is its tendency to induce unwarranted violence. Clearly, opiates do not possess this characteristic pharmacologically. Though an opiate user could, for instance, commit an act of violence during a robbery, there is nothing in the drug effect which would so incline him.

See footnotes at end of article.

If anything, opiates are more likely to inhibit any tendency toward violent behavior.

From all evidence, amphetamines tend to set up conditions in which violent behavior is more likely to occur than would be the case had an indiviual not used it. Suspiciousness and hyperactivity may combine to induse precipitous and unwarranted assaultive behavior. Under the influence of amphetamines liability of mood is common—the user abruptly shifting from warmly congenial to furiously hostile moods for the most trivial of reasons.

Most high dose amphetamine users describe involvement, either as aggressor or victim, in episodes in which murder or mayhem was avoided by the slimmest of margins. There are, of course, instances in which violence actually occurred. From descriptions of a number of the events, it is clear that they would not have taken place had it not been for the use of amphetamines.

The role of barbiturates in this is difficult to assess. Paradoxically, when barbiturate use is not followed by sleep they often induce considerable irritability (though opiates, cannabis and phenothiazines are calming). Users of amphetamines often use barbiturates for sedation and may thus unknowingly add to, rather than diminish, a tendency toward anger or perhaps violent behavior.

Compulsivity.—Perhaps the most curious effect of amphetamine is its capacity to induce behavior which is persisted in or repeated for prolonged periods. If the user is not too disorganized the activity may, on the surface at least, be useful. Dwellings may be cleaned, automobiles polished or items arranged to an inhuman degree of perfection. Or these activities may be partially completed when another compulsively pursued task intervenes. The behavior may be bizarre as in the elaborate but nonfunctional reconstruction of mechanical or electrical devices, or it may take on a destructive character as in skin picking which may produce extensive ulcerations.

Analogous to this compulsive behavior in man is what has been termed stereotype in animals. Rats, mice, guinea pigs, cats and squirrel monkeys[19] almost without exception performed repetitive acts, which though not unique for the species, were characteristic for each animal.

Over-amping.—The term "over-amping" was probably derived during the year when commercially produced ampules of methamphetamine were widely used. Users prefer this word to the word "overdose" which carries the connotation of an overdose of heroin, a condition which produces an entirely different set of symptoms. A variety of events may occur when the dose of amphetamine taken far exceeds the tolerance of the user. Descriptions have been too few in number for a clear pattern to emerge. One or several symptoms may occur, including chest pain which lasts minutes or hours. Unconsciousness, again lasting minutes or hours, may occur, the user waking and occasionally finding himself sphasic or paralyzed for hours or days in a manner suggestive of the pattern seen following a cerebralvascular accident. More frequent is the situation in which the user remains conscious, his mind racing with a myriad of thoughts, often in an ecstatics mood but unable, or perhaps unwilling to move.

Under these circumstances the user's friends attempt to nurse him and may use opiates or sedatives in an attempt to counteract the effects of over-amping.

Death.—The motto *Speed Kills* is cute, short enough to fit a button, and carries a message of concern. It is not altogether accurate. Very few deaths have been recorded in which overdose of amphetamines has been causal.

Though viral hepatitis and other infections are common and persistent among intravenous amphetamine users, again, only a few deaths related to infection have been recorded. Death by violence might add still a few more names, and the San Francisco County Coroner revealed that only one or two deaths per year in each county could be attributed to overdose and a like number to other events which might be related to amphetamine use.

The rarity of death may be due to the tolerance produced by these drugs and the relatively high ratio of effective dose to fatal dose. Dr. David E. Smith of the Haight-Asbury Clinic and Amphetamine Research Project indicates that the two deaths he has seen were relative novices in amphetamine use.

Chlorpromazine (and probably other phenothiazines) have been shown to be effective in suppressing amphetamine effects both clinically[20] and in animals[21] while barbiturates, though not without effect, are less valuable and introduce the hazard of barbiturate toxicity. These findings have been confirmed by acute, intravenous injection of methaphetamine, *d*-amphetamine and *d,l*-amphetamine. Each produced rapid death in toxic does (usually within 2-3 minutes, though 10 minutes was allotted for experimental purposes). Those animals which did not succumb promptly usually survived for at least six hours. Because of the rapidity of death, such conditions as grouping, room temperature, or activity did not enter into consideration. Several findings of interest emerged: unlike the results found with i.p. injection of amphetamine the I.D.–50 curves were sharp and consistent; in addition, the lethality of each of the three substances was approximately the same; and chlorpromazine (CPZ) effectively raised the I.D.–50 to about 55 mg/kg (with 5 mg/kg of CPZ), from the usual LD–50 of about 35 mg/kg.

Besides confirming the usefulnes of chlorpromazine in antagonizing the effects of phenethylamines, these experiments also suggest that the antagonism is not merely based on the tendency of CPZ to diminish hyperactivity (though this may be one mechanism of action), but also by altering biochemical events within the tissues.

Pathology.—Though human deaths due to amphetamines are not common, some clinical and pathological descriptions have been published. In a recent report [22] Cravey and Baselt describe a young man who swallowed two packets of methamphetamine when confronted by police. Within a half-hour he appeared delusional and was responding to hallucinations. When hospitalized he was cyanotic, with a temperature of 104°, pulse of 102 and blood pressure of 74/50. He was in severe acidosis. He died 5½ hours from the time of ingestion. This and other reports and unpublished case historics indicate that marked hyperpyrexia and shock are usually noted prior to death from amphetamines. In experiments with mice given amphetamine, Hardings and Peterson [23] found that those whose temperatures rose above 42.4°C usually died while those whose temperatures remained below 41.7°C usually survived. Zalis *et al.*[24] found that dogs given amphetamines developed fevers proportional to dose. He found that pulse rose at first but dropped rapidly in the terminal stage, and acidosis occurred due to the formation of lactic acid and acetic acid.

Pathologic findings in both man and animals are generally nonspecific and show pulmonary congestion and often congestion of other organs including the brain. Petechial hemorrhages in various organs including the brain are frequently but not uniformly described. Only rarely [25] is massive hemorrhage noted.

Histologic examinations of the brain tissues of monkeys, dogs, and other animals [26] has occasionally shown some cellular deterioration, but usually does not Zalis *et al* reported mild to moderate deterioration in the cerebral cortex of all 24 of their animals and suggest it was due to a hypermetabolic state associated with hyperpyrexis.

I have found no first-hand reports in the Western medical literature describing a histological picture of damage to human brain cells, though Lemere [7] refers to an article by Tatetsu [27] citing histopathological evidence (lobotomy and postmortem) of permanent organic brain damage. In two of six deaths due to amphetamine overdose reported by the San Francisco Coroner, petechial hemorrhages were noted in brain tissue.

Other Complications.—As in any situation in which hypodermic equipment is shared without proper sterilization, viral hepatitis is common. Evidence of hepatic damage is so common that consideration has been given to the possibility that part of the damage may be due to a direct toxic effect of amphetamines on liver.

Other forms of infection are common. Often the skin becomes shiny and delicate; small injuries may produce ulceration and healing is slow.

Jaw grinding is often described, and like tremors due to lesions of the basal ganglia, can be stopped briefly by conscious control. Mattson and Calverlay [28] report other dyskinesias in some individuals on therapeutic doses of d-amphetamine.

RECOVERY

Though a Japanese report [27] suggests that some high dose amphetamine users may become chronically psychotic, what has been most striking in our experience has been the slow but rather complete recovery of users who, according to their own descriptions and that of others, had become rather thoroughly disorganized and paranoid prior to their detention. Though most of the florid symptoms are dissipated within a few days or weeks, some confusion, some memory loss, and some delusional ideas may remain for perhaps six to twelve months. After that time, though there may be some residual symptoms, they are slight and not disabling and are noticed primarily by the (now abstinent) user himself. Most commonly, ex-users report slightly greater difficulty in remembering.

See footnotes at end of article.

As a group they describe being more open and talkative than they had been prior to their use of amphetamines. They like the result and declare with certainty that it is due to their experience with amphetamines.

Anyone concerned with the welfare of amphetamine users, and the users themselves, should recognize that most, if not all, can recover from even the most profound intellectual disorganization and psychosis given six months or a year of abstinence.

TREATMENT

The care of amphetamine users poses some special problems. In them are combined the problems of management of the hooked drug user and the paranoid personality. Though suffering with severe medical and psychiatric symptoms, they are generally fearful of hospitalization.

Some crises may yield to phenothiazine tranquilizers or first aid, but abstinence is probably the most important therapeutic device, and this result may be difficult to attain. Many users who attempt abstinence find it difficult because of the fatigue which results, extreme at first, gradually diminishing but persistent, perhaps for months.

Abstinence for many is forced by a stay in prison or jail or commitment to a psychiatric hospital or civil addict program. No data have yet been collected to indicate the long term value of such enforced abstinence. Certainly, many who have been incarcerated have returned to their drug use upon release. A concerned person is in a bind. Users do not readily volunteer for care, but commitment programs offer little besides enforced abstinence. Should the user be permitted to live in the limbo of his drug or forced into the limbo of an institution? Can voluntary programs be devised which are sufficiently useful and attractive that users will seek them out and persist in their program? Can commitment programs be devised which do not resemble slightly benign prisons? Or, do we just let the user seek heaven or hell on his own terms while the community offers help only on its own terms?

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APPENDIX 9

THE TRUE SPEED TRIP: SCHIZOPHRENIA

(By Solomon H. Snyder)

(Psychology Today, pages 42–46 and 74–75, January, 1972)

GIVE THE PATIENT 10 MILLIGRAMS OF DEXTROAMPHETAMINE EVERY HOUR, DAY AND NIGHT, AND THE RELIABLE RESULTS IS PSYCHOSIS—"A UNIQUE FEATURE OF AMPHETAMINE PSYCHOSIS IS COMPULSIVE, STEREOTYPED BEHAVIOR THAT THE VICTIM REPEATS HOUR AFTER HOUR"

The patient has just been admitted to the hospital emergency room, so violent that it took three strong men to bring him in.

From relatives and from bits of the patient's incoherent ramblings, the admitting psychiatrist begins piecing together an account. Yesterday John felt that others were looking at him in a peculiar way. He had walked the streets all night and spent this morning looking for gold in the gravel paths of the city park. This afternoon he heard voices talking about him. Hostile, secretive persons were looking at him; he was sure they were planning to kill him.

In an interview, the psychiatrist concludes that John suffers from auditory hallucinations and that he has delusions of persecution, and volatile, inappropriate emotions. The diagnosis is simple: an obvious case of paranoid schizophrenia.

But there is a hooker. John is not schizophrenic at all. After a few hours his wife arrives at the hospital and tells the psychiatrist that John has been injecting methamphetamine into his veins for the past three months. John is a speed-freak, an amphetamine addict, and is suffering the principal hazard of the habit.

Key

For years researchers have been trying to find a chemical key to schizophrenia. The first quest is for a drug that will make normal persons act, temporarily, in the peculiar ways that schizophrenic patients act. Such a drug could provide an important lead to the causes of schizophrenia. And if the drug also will make animals behave schizophrenically, investigators will be able to manipulate schizophrenia in their laboratories. They can explore how environmental, chemical and genetic factors influence schizophrenic behavior, and they can investigate a wealth of possible cures. A growing number of scientists believe that this approach is likely to pay off in the search for a cure of schizophrenia.

Amphetamine offers promise to be this key drug, because it produces patients like John who can trick even experienced clinicians into erroneous diagnosis of schizophrenia. But other chemicals also are under serious study in the search. LSD is the best known psychotomimetic—psychosis-mimicking—drug: LSD, mescaline, psilocybin and other drugs produce effects similar to psychosis. Alcohol is another; an alcoholic in withdrawal undergoes delirium tremens—d.t.s—an agitated state fraught with frequent, frightening hallucinations. And many drunks have heard nonexistent voices and seen occasional elephants of unusual colors. Marijuana and its concentrate, hashish, taken in sufficient quantity, can produce hallucinations. And the United States Army, with somewhat different motives, has investigated several highly secret chemicals related to atropine, minute doses of which produce a delirious, psychotic-like state.

Daze

Most of these drugs yield only imperfect approximations of schizophrenia: disoriented and confused—often they cannot say who they are, where they are, or what time of day it is, or what month. The true schizophrenic patient, on the other hand, is likely to be well oriented as to person, place and time. Most drug-produced disorientation resembles the symptoms of brain damage—from accident, stroke, brain tumor, vitamin deficiency, or hormonal imbalance—more than it resembles schizophrenia, Amphetamines provide a much better chemical analog to schizophrenia—speed-freaks are invariably well oriented, perhaps even more when they are under the influence than when they are not drugged.

After recovering from a psychotic episode, an amphetamine user usually retains a detailed memory of the whole experience, as do most patients recovering from schizophrenia. By contrast, the other drugs—possibly excepting the psychedelics—deaden the mental faculties so that a patient may have partial or total amnesia that covers the episode.

See

Another important difference is that in drug-induced psychosis hallucinations or perceptual distortions are primarily visual; in true schizophrenia they are almost always auditory.

When a schizophernic patient does report visual hallucinations, it is usually during the early stages, after an acute onset. This was true in the cases of amphetamine psychosis reported by Phillip H. Connell in London: visual hallucinations occurred primarily in patients whose psychoses developed acutely after a few large doses of amphetamine. The patients who had escalated dosage gradually over several months tended to have mostly auditory hallucinations, Another telling link is that the drug therapy most effective for schizophernia is the one that is most effective for amphetamine psychosis. A barbiturate or sedative may be helpful for a number of drug states, but phenothiazine tranquilizers are uniquely effective in amphetamine phychosis and schizophrenia.

For all of these reasons, it appears that amphetamine psychosis is the best chemical model of true schizophrenia, at least of the paranoid type.

Pills

The average patient with amphetamine psychosis started taking the drug in pill form. Most pills on the market contain five or 10 milligrams of active drug, and are called pep pills or diet pills, depending on the user's purpose. Tolerance for amphetamine builds up rapidly; the pill-popping addict must take more and more pills at shorter and shorter intervals to reach the same high—sometimes more than 100 pills a day. But the typical amphetamine addict tires of pills quickly and begins mainlining: he injects the drug directly into his veins, with perhaps 100 or 200 milligrams of methamphetamine—crystal—in each injection, or hit.

Even before he withdraws the needle he feels an intense buzzing euphoria, called a rush, that users sometimes liken to an orgasm of the whole body. After this, the addict will be elated and hyperactive for several hours, with no desire for food. He may eventually shoot up every three or four hours, on a five- or six-day run, until he crashes, exhausted, to sleep for two to four days. He awakens with a ravenous hunger; after he has eaten as much as he can hold, he goes into profound depression he seeks the only known cure; more amphetamine.

F.B.I.

Signs of amphetamine psychosis first develop while the speed-freak is under the influence of the drug (they are thus unlike delirium tremens, a withdrawal psychosis). The harbinger is vague fear and suspicion—*What was that? I heard something. Is somebody trying to get me?* Soon the paranoia centers around a specific delusion—for example, that the FBI is out to get him. An amphetamine party may begin with everyone very elated and talkative, and many end with each person stationed silently at a window, peeking through the curtains for signs of the police.

Acting on his delusions, the speed-freak may become violent—*to get them before they get me.* It is in this sense that the slogan speed kills is most accurate: more persons die from senseless and brutal violence associated with amphetamine delusions than from overdoses of the drug itself.

Bag

Another unique feature of amphetamine psychosis is compulsive, stereotyped behavior that the victim repeats hour after hour, apparently without fatigue or boredom. A woman sorted out her handbag over and over for several hours. A man at the table constantly rearranged his knife and spoon. A teen-ager counted cornflakes all evening. While a user is busy at this major repetitive behavior, he may also grind his teeth, lick his lips, or constantly shift his eyes from side to side.

Drugged laboratory animals behave similarly. Under small doses of amphetamine, they become hyperactive and vigilant; with greater doses, they develop repetitive, stereotyped behavior. And Roy Pickins and his colleagues have found that when laboratory rats can dose themselves with amphetamines by pressing a bar, they follow a pattern of intake and abstinence, run and crash, that is similar to the pattern of the human amphetamine user.

Why

Some theorists believe that lack of sleep may cause amphetamine phychosis, not any ingredient of the drug itself. We know that often persons who go without sleep for long periods develop bizarre, psychoticlike behavior. Others speculate that amphetamine's overstimulation of the senses brings on the psychosis. Still others argue that the intense emotional arousal in the amphetamine experience simply triggers a latent psychosis that any stress could have provoked.

The best way to resolve these questions was to produce amphetamine psychosis in human beings—deliberately drive people crazy—and carefully follow the sequence of events.

The first person to essay such an experiment was a physician, John Griffith at Vanderbilt University. He recruited four men in their late 20's and early 30s who already were amphetamine addicts but who had never shown signs of amphetamine psychosis, or any tendencies toward schizophrenia. They were all mildly to moderately psychopathic, a condition that is readily distinguishable from schizophrenia. Griffith relentlessly dosed each man with dextroamphetamine—10 milligrams, orally, every hour of the day and night— until he developed signs of amphetamine psychosis. Griffith carefully monitored each man's physiological and psychological symptoms throughout the experiment.

Cling

Each man exhibited unequivocal psychosis within two to five days and the psychotic symptoms followed the same sequence in each. After the first doses of amphetamine he showed the usual euphoria, excitement and hyperactivity. During this time he was lucid, in good contact with his surroundings, normally boyish and warm. But by the fifth or sixth dose, he had changed: he became quiet, depressed, uninterested in amusement—a hypochondriac who clung dependently to Griffith.

This pattern was not ordinary amphetamine behavior, probably because the subjects were tested in solitude in a controlled hospital environment. On his own, an amphetamine addict would probably increase his dosage before such symptoms developed, and social variables undoubtedly would color the experience. For example, his interactions with other amphetamine users probably would keep him hyperactive longer than Griffith's subjects were.

Signs

The first patient developed psychotic signs after about 24 hours; the last after 120 hours (five days). In each case the subject began peculiar behavior about eight hours before the explicit psychotic symptoms appeared. He became taciturn, and refused to talk about his thoughts or feelings. He asked guarded questions about the room, the experiment, or unusual noises, but backed off if anyone asked why he wanted the information. In retrospect, the patients recalled that it was at about this time that paranoid ideas first entered their minds. For a while they could recognize that the ideas were unfounded, chemical delusions—familiar and expected side-effects of the drug. Later the ideas were not so easy to dismiss.

"One man believed he was the target of rays from a 'giant oscillator'—
Another maintained that his wife planned to kill him"

The florid psychosis commenced abruptly in each man. After being stonyfaced and silent for about eight hours, he began discussing his thoughts openly and sharply, though he remained cold and aloof. His paranoid ideas became more elaborate and organized, and he believed them. One man believed he was the target of rays from a "giant oscillator." Another maintained that his wife planned to kill him. Strikingly unlike patients with other forms of drug-psychosis, these subjects could not be comforted easily and they were not at all suggestible. The psychosis dissipated within eight hours of the drug cut-off in three of the subjects; the fourth remained somewhat paranoid for another three days.

Out

Griffith's experiment answers some questions about possible alternative explanations of drug-induced psychosis. Fist of all, the psychosis can not be attributed simply to sleep deprivation, because two of the men became psychotic after losing only one night's sleep, which alone is not long enough to produce psychotic symptoms.

Nor can the psychosis be attributed to intense stimulation and arousal—the men never appeared to be overstimulated—in fact, after the first few hours they all appeared to be depressed.

Griffith also was careful to rule out pre-drug personality as a significant factor; he selected subjects who had never shown schizophrenic tendencies either in a drugged state or undrugged.

Order

The amphetamine psychosis that Griffith observed is a good imitation of schizophrenia, probably the best of the drug-induced states. But it isn't perfect; there are differences, the most salient being that Griffith's subjects showed no signs of formal, schizophrenic thought disorder. This is the bizarre mental process that produces crazy associations and meandering contradictory, hard-to-follow speech (see "Schizophrenia: Carnival Mirror of Coherence," by Donald Bannister, *P.T.*, January 1971). Other researchers confirm Griffith's fiinding: amphetamine addicts rarely display thought disorder.

The lack would seem to destroy any systematic analogy between amphetamine psychosis and schizophrenia, for many psychiatrists consider thought disorder to be the vital element of schizophrenia (see "The Shattered Language of Schizophrenia," by Brendan A. Maher, *P.T.*, November 1968). But that issue is not so simple. Doctrinare diagnosis aside, thought disorder does not invariably accompany schizophrenia. Acute schizophrenics show much less thought disorder than chronic schizophrenics do; and paranoid schizophrenics, with their tight and ordered delusional systems, may show no thought disorder at all. In this connection it is encouraging to note that the amphetamine psychosis usually is both acute and paranoid, and thus resembles the types of schizophrenia with least thought disorder.

"Amphetamine-induced psychosis seems to be the best available chemical imitation of schizophrenia"

Brain

From Griffith's research and from clinical experience, it seems safe to say that large doses of amphetamines will almost invariably produce psychosis similar to acute, paranoid schizophrenia. The clinical picture is not identical to schizophrenia, however, perhaps because amphetamine's grab-bag of side-effects (arousal, sleeplessness, loss of appetite, stereotyped behavior, etc.) may complicate matters. To find out which components of the amphetamine experience are most responsible for the psychosis, we must study the brain to find how nerves, tissues and brain chemicals respond when amphetamine is added to the system.

An obvious clue is that the chemical structure of amphetamine closely resembles the structures of dopamine and norepinephrine, two chemicals that occur naturally in the brain. Dopamine and norepinephrine are found at the brain's synapses, the points at which branches of one neuron come close to but do not quite touch, the sensitive portions of another neuron.

Fire

When a nerve impulse in a neuron reaches a synapse, it triggers the release of chemicals—dopamine or noreprinephrine, among others—out of the nerve endings. These wash up against the next neuron and trigger it to renew the nerve impulse and send it on its way to the next neuron link in the chain.

It is through these brain chemicals that one neuron thus communicates with the next, and this neuronal conversation underlies all information-processing, thoughts, plans, and perceptions in the brain. Whether the neurotransmitter is dopamine, norepinephrine or some other chemical, it must be inactivated after it has done its job. Otherwise it could continue to stimulate the second nueron and make it continue firing. Some transmitters are inactivated by other chemicals that neutralize them. Dopamine and norepinephrine are inactiviated by being transported back into the nerve endings that released them. Julius Axelrod, who discovered this mechanism, called it "reuptake," and won a Nobel Prize in 1970 for his discovery.

One of the ways amphetamine enters the picture is by inhibiting the reuptake mechanism: small pools of used dopamine or norepinephrine built up at the synapses thereby causing nerves that are sensitive to dopamine and norepinephrine to fire erratically, repeatedly, and without simulation from other neurons. The resulting behavior depends on whether the stimulated nerves are in dopamine pathways or norepinephrine pathways.

Image

Which pathways are responsible for which symptoms? We get help in answering this question because amphetamine can be broken down into two mirror-image forms that have different effects on behavior and on the brains transmitter chemicals. One type rotates polarized light to the right, and is called dextroamphetamine; the lefthanded form is levoamphetamine, borrowing *dextro* from Latin to indicate *right* and *levo* to indicate *left*.

It has long been known that dextroamphetamine is by far the more potent of the two forms in stimulating the central nervous system. Smith Kline & French puts out a pill form of dextroamphetamine, under the trade name Dexedrine.

Joseph Coyle, Kenneth Taylor and I have found that dextroamphetamine is 10 times more powerful than levoamphetamine in inhibiting the reuptake mechanism in norepinephrine nerves. When dextroamphetamine is present in a system, there will be norepinephrine at brain synapses, the nerves triggered by norepinephrine will fire more often than usual, and the behaviors that are governed by these norepinephrine tracts will be exaggerated. And all of these effects will be dramatically more pronounced with dextroamphetamine than they are with levoamphetamine.

In dopamine tracts, on the other hand, dextroamphetamine and levoamphetamine tend to be equally effective: dextroamphetamine produces a slightly greater pileup of dopamine at the synapses than levoamphetamine does, but the difference is nowhere near the order of 10 to one. This suggests that if a given symptom of amphetamine intake appears about as often with dextroamhetamine as with levoamphetamine, that behavior is probably mediated by the dopamine neurons. If a behavior occurs much more readily with dextroamphetamine than with levoamphetamine, the behavior probably is governed by tracts of norepinephrine neurons.

Rats

Kenneth Taylor and I recently studied two typical amphetamine effects—motor activity and stereotyped behavior—in laboratory rats. With relatively small doses the animals appeared to be excited, running about their cages furiously, and this effect was exactly 10 times more pronounced under dextroamphetamine than it was under levoamphetamine. This perfectly parallels the 10-fold advantage that dextroamphetamine has in producing excess norepinephrine, and it strongly suggests that the central-stimulant and heightened-activity effects are probably produced when amphetamine comes in contact with the norepinephrine neurons of the brain.

With somewhat larger doses of amphetamine, animals begin stereotyped behavior similar to the compulsive, repetitive behavior of speed-freaks. Rats tend to stay in one corner of the cage, to sniff and lick repeatedly, and to gnaw incessantly on any available object, such as the bars of the cage. We found that the two forms of amphetamine were fairly close in their ability to produce stereotyped gnawing in rats. This suggests that the brain's dopamine tracts are responsible for repetitious, stereotyped behavior in amphetamine users. Other investigators have reached the same conclusions by showing that, when dopamine areas of the rat brain are cut out, amphetamine does not produce stereotyped behavior as readily as it usually does.

After hearing about our successful experiments with animals, Burton Angrist and Samuel Gershon at New York University asked the next logical question: how do dextroamphetamine and levoamphetamine compare in producing amphetamine psychosis in human beings? They studied three former amphetamine addicts, volunteers, putting them through the 10-milligram-per-hour regimen that Griffith followed. Each subject went through three separate sessions; once with dextroamphetamine, once with levoamphetamine, and once with a mixture of the two.

Both drugs and the mix produced psychosis in each man and none was markedly more powerful than any other. (Dextroamphetamine was slightly faster than the other preparations, levoamphetamine was the slowest, and the mixture, as might be expected, was intermediate.)

Maps

This finding suggests that amphetamine psychosis is produced by excessive activity in the dopamine tracts of the brain, while such other amphetamine effects as hyperactivity and euphoria originate in the norepinephrine tracts. With a chemical stain developed by a group of Swedish researchers, it has recently become possible to map dopamine and norepinephrine pathways through the brain. We have learned, for example, that some prominent dopamine tracts end in areas of the brain's limbic system that regulate a variety of emotional behaviors. The largest dopamine tract has become famous in its own right: it leads to an area that coordinates body movements, and if the tract is damaged so that there is a deficiency of dopamine, the patient is likely to suffer from Parkinson's disease. L-dopa, the drug that is converted to dopamine in the brain, has been hailed as a miraculous treatment for Parkinson's disease.

The major norepinephrine tracts start in the brain stem and ascend through the medical forebrain bundle—the pleasure center. Animals will work very hard to get electrical stimulation in this area, which likely has an important role in the euphoric high of amphetamine use. The norepinephrine tracts also extend into other parts of the hypothalamus, perhaps into the so-called satiety center which, when stimulated, makes a food-deprived animal stop seating.

Several pharmacologists have found that phenothiazine tranquilizers produce improvements in schizophrenic patients by blocking the dopamine receptors in the brain. This fits nicely with our idea that amphetamine produces psychosis by increasing the amount of dopamine around dopamine-sensitive cells. Phenothiazine alleviates symptoms by working in the opposite direction: it makes the dopamine-sensitive neurons less sensitive.

Systems

Amphetamine-induced psychosis seems to be at best available chemical imitation of schizophrenia. But there remains one nagging difficulty: the amphetamine illness resembles paranoid schizophrenia, not catatonic schizophrenia, undifferentiated schizophrenia, or other forms of the disorder. I don't think this means that paranoid schizophrenia is a different disease from other types. I think that if amphetamine were to act solely on dopamine neurons and had no effect on norepinephrine neurons, the result might be the classic, undifferentiated form of schizophrenia, or a form with characteristics determined only by the personality of the patient. But norepinephrine stimulation adds another set of symptoms to the clinical picture—hyperactivity, sleeplessness, and loss of appetite. The alerting effect may make the patient try to find an intellectual framework for the strange feelings that come over him. He searches for explanations and meanings, and this leads to the elaborate system of delusions that is the essence of paranoid. In short, the basic amphetamine psychosis may arise through the brain's dopamine mechanisms, but the specific paranoid solution comes from the contribution of norepinephrine systems.

Investigators are now trying to improve upon amphetamine, to find a drug that will stimulate dopamine systems but not norepinephrine systems. If my reasoning is accurate, such a drug would produce a pure schizophrenia indistinguishable from the disorder that is observed in mental-hospital wards. The drug would be a boon. It would give specific direction to the search for the cause of natural schizophrenia, and would allow investigators to manipulate schizophrenic symptoms in the laboratory and study, in animals, a vast range of possible cures.

AMPHETAMINE—A SKETCH

Chemists first synthesized amphetamine in 1887, but no one evaluated it systematically until 1927, when experimenters reported that laboratory animals dosed with the drug became hyperactive and lost all interest in eating or sleeping. Five years later a pharmaceutical house introduced the drug into clinical medicine under the name Benzedrine.

Scientists isolated two different forms of the drug. One of them rotated polarized light to the right—clockwise: the other rotated it to the left. Gordon Alles found that the right-handed *dextro* form was a much more potent central stimulant than the left-handed, *levo* form. Soon dextroamphetamine (Dexedrine) was with us.

Dexedrine and Benzedrine, both marketed by Smith Kline & French Laboratories, were the primary commercial amphetamines until 1945, when Burroughs Wellcome & Co. joined the market with methamphetamine (Methedrine), now notorious under the name *speed*.

The number of amphetamine-related agents proliferated. Some deemphasized the stimulation effects and decreased appetite—phenmetrazine (Preludin) and diethylpropion (Tenuate) are examples. Methylphenidate (Ritalin), on the other hand, made its debut as a potent central stimulant with little or no appetite-suppressing properties. (The researchers discoved that, in a seemingly paradoxical way, it tranquilized hyperactive children; physicians prescribe it widely for this purpose.) Despite their subtle differences, all these drugs are powerful, all lend themselves readily to abuse, and all can lead to amphetamine psychosis.

Astir

Amphetamines have other effects than hyperactivity, sleeplessness, and loss of appetite. Persons under amphetamine are talkative, restless, always in motion, often with repetitive and stereotyped movements. They take on monumental projects and assignments with little sense of fatigue or boredom. They may show improved scores on reaction-time tasks, though this is probably due to increased alertness and scanning of the environment rather than to increased response speed *per se*.

The effect of amphetamines on sexual behavior is not clear-cut. Gosta Rylander, a Swedish physician, thinks amphetamine is the most powerful aphrodisiac known. He quotes a patient who said that an injection of amphetamine "goes straight from the head to the scrotum . . . This wonderful drug is a —— pump . . . I always need a couple of girls at the same time." But others report with equal conviction that amphetamine dulls sexual sensitivity. Eugene Schoenfeld, M.D., who writes "HIPpocrates," an unorthodox medical-advice column that appears in many underground papers, has noted that "amphetamines commonly make sexual arousal and fulfillment more difficult to achieve."

Amphetamine also dilates the bronchial tubes and it was first used in inhalers for asthma patients. Each inhaler contained the equivalent of 500 milligrams of Dexedrine—about 50 times the average dose for appetite suppression. In the '30s, inhaler containing these massive amounts of amphetamine were sold widely, and the drug could be removed easily from the inhaler.

Doze

Although there were a few cases of amphetamine psychosis in persons who consumed the contents of inhalers, the first reported incidence of amphetamine psychosis was among persons being treated with amphetamine for narcolepsy, an uncommon condition in which the individual goes to sleep at unpredictable times—he can dose off while he is walking, or when he is in the midst of a heated discussion.

Benzedrine proved most useful in keeping these patients awake. In 1938 three narcoleptic patients were reported to have developed temporary paranoid psychoses after they had escalated their daily Benzedrine doses two- or threefold—against doctors' orders. The patients had the major symptoms of full-fledged amphetamine psychosis.

The first epidemic of amphetamine psychosis occurred in Japan. During World War II the German Luftwaffe used amphetamines to keep pilots alert on long bombing missions. Germany's allies, the Japanese, soon began producing large quantities of amphetamines. Toward the end of the war, Japanese munitions-factory workers used these drugs almost compulsively to keep up their spirit and efficiency, and drug companies built up enormous stocks of them. With the war's end, the companies cleaned out their huge stockpiles by advertising "amphetamine for elimination of drowsiness and repletion of the spirit." The ad campaign apparently appealed to many young Japanese who suffered from frustration and loss of self-confidence—because by the mid-1950s amphetamine abuse had reached epidemic proportions. More than 500,000 Japanese were amphetamine addicts, and there were at least 50,000 reports of amphetamine psychosis, in 1954 the government imposed six-month jail sentences for simple illegal possession of the drug, and in three years the epidemic was over.

Hippies

The most massive and systematic intravenous dosing of amphetamines, however, began in the United States in the late 1960s. It started with the hippies in San Francisco. To heighten the intensity of the psychedelic experience, some bold experimenters added Methedrine to preparations of LSD. Drug users I interviewed said that Methedrine is the favored amphetamine because it produces more euphoria than the others. (It also is the amphetamine most easily synthesized by underground chemists.) In any event, a new class of hippe, the speed-freak, soon emerged. He often could not tolerate overwhelming self-revelation induced by LSD, and preferred instead to be high, pure and simple. He injected astronomical doses of amphetamine into his veins, and amphetamine psychosis stalked the Haight-Ashbury neighborhoood. Most speed-freaks, aware of the effect, expect sooner or later to experience severe paranoid psychosis.

Words

Smart, flip, in-group terminology gathers around a new forbidden fruit the way insects do, and the amphetamines have a considerable collection. Some terms refer descriptively to the uses and effects of amphetamine: *crank, pep pills, uppers, lid-poppers, wake-ups, eye-openers, truck drivers, copilots, coast-to-coasts.* Other terms identify specific pills by their chemistry and appearance: *bennies, dexics, meth, whites, black beauties, purple hearts, greenies, footballs.*

But it is the ultimate frequent effect of amphetamine that has inspired the simplest and most telling catch-phrase of all: *Speed Kills.*

APPENDIX 10

THE PHARMACOLOGICAL BASIS OF THERAPEUTICS

(Fourth Edition, The MacMillan Co., first printing 1970, Chapter 24, pages 501–523)

AMPHETAMINE

Amphetamine, racemic β-phenylisopropylamine (Table 24–1), has powerful CNS stimulant actions in addition to the peripheral α and β actions common to sympathomimetic drugs. Its pressor effects were first described by Piness and associates (1930). Alles (1933) observed its bronchodilator, respiratory stimulant, and anleptic actions and, comparing it with epinephrine, found its caridovascular effects to be of much longer duration but its potency to be only about 0.5 to 1.0%. The central stimulant effects of amphetamine were first used clinically by Prinzmetal and Bloomberg (1935) to treat narcolepsy and have since been employed in a variety of conditions, including obesity fatigue, parkinsonism, and poisoning by CNS depressants. Unlike epinephrine, it is effective after oral administration and its effects last for several hours.

Pharmacological properties

Cardiovascular Responses. In man and animals, amphetamine given orally raises both systolic and diastolic blood pressures. The pulse pressure is usually increased, since amphetamine has β- as well as α-receptor activity. Heart rate is often reflexly slowed; with large doses, cardiac arrhythmias may occur. Cardiac output is not enhanced by therapeutic doses, and cerebral blood flow is little changed. The *l* isomer is slightly more potent than the *d* isomer in its cardiovascular actions.

Other Smooth Muscles. In general, smooth muscles respond to amphetamine as they do to other sympathomimetics. Bronchial muscle is relaxed, but the effect is not sufficiently marked to be of therapeutic value. The contractile effect on the urinary bladder sphincter is particularly marked, and has been used in treating enuresis and incontinence. Pain and difficulty in micturition occasionally occur. The gastrointestinal effects of amphetamine are unpredictable. If enteric activity is pronounced, amphetamine may cause relaxation and delay the movement of intestinal contents; if the gut is already relaxed, the opposite effect may be seen. The response of the human uterus varies, but usually there is an increase in tone. Contraction of the spleen probably accounts for the transient erythremia observed in some species but not in man.

Central Nervous System. Amphetamine is one of the most potent symathomimetic amines with respect to stimulation of the CNS. Many experimental and clinical studies of its central excitatory and analeptic properties have been made, comparing its potency with its congeners and with such other drugs as strychnine, picrotxin, pentylenetetrazol, nikethamide, methylphenidate, and caffeine. The results vary with the investigator, the species, the doses employed, the index of recovery selected, and the depressants against which the analeptic is measured. However, there is little question that amphetamine is an effective agent for stimulating the medullary respiratory center, lessening the degree of central depression caused by various drugs, and stimulating the normal cerebrospinal axis. Animals given sufficient doses of amphetamine show tremor, restlessness, increased motor activity, agitation, and sleeplessness; these effects are thought to be due to cortical stimulation and possibly to stimulation of the reticular activating system. In contrast, the drug can obtund the maximal electroshock seizure discharge and prolong the ensuing period of depression; these properties may be related to the usefulness of amphetamine in certain cases of epilepsy. In elicitation of CNS excitatory effects, the *d* isomer (dextroamphetamine) is three to four times as potent as the *l* isomer.

In man, the marked *analeptic* action is exemplified by the fact that anesthesia produced by 0.5 g of amobarbital sodium given intravenously can be greatly lessened by 10 to 30 mg of amphetamine injected intravenously. The *psychic* effects depend on the dose and the mental state and personality of the individual. The main results of an oral dose of 10 to 30 mg are as follows: Wakefulness, alertness, and a decreased sense of fatigue; elevation of mood, with increased initiative; confidence, and ability to concentrate; often elation and euphoria; increase in motor and speech activity. Performance of only simple mental tasks is improved; and, although more work may be accomplished, the number of errors is not necessarily decreased. Physical performance, for example, in athletes, is improved. These effects are not invariable, and may be reversed by overdosage or repeated usage. Prolonged use of large doses are nearly always followed by mental depression and fatigue. Many individuals given amphetamine experience headache, palpitation, dizziness, vasomotor disturbances, agitation, confusion, dysphoria, apprehension, delirium, or fatigue. (*See* review by Weiss and Laties, 1962.)

Fatigue. Prevention and reversal of fatigue by amphetamine have been studied extensively in the laboratory, in military field studies, and in athletics. In general, the duration of adequate performance is prolonged before fatigue appears and the effects of fatigue are at least partly reversed. The most striking improvement due to amphetamine appears to occur when performance has been reduced by fatigue and lack of sleep. Such improvement may be partly due to alteration of unfavorable attitudes toward the task. However, amphetamine reduces the occurrence of microsleeps, the brief losses of vigilance that impair performance after prolonged sleep deprivation, and thus improves execution of tasks requiring sustained attention. The drug is effective in postponing sleep and promoting wakefulness. Rapid-eye-movement (REM) sleep is reduced to about 9%, less than half the normal proportion of total sleeping time. The need for sleep may be postponed, but it cannot be indefinitely avoided. When the drug is discontinued after long use, total sleep increases, and REM sleep appears more rapidly than usual and is unduly prolonged. The pattern of sleep takes as long as 2 months to return to normal. Because the beneficial effects of the drug have to be repaid in the coin of fatigue and often depression, and because of the variable reactions in patients, amphetamine should not be used indiscriminately. (*See* reviews by Weiss and Laties, 1962; Oswald, 1968.)

Analgesia. Amphetamine and certain other sympathomimetic amines, such as causes a shift of the resting EEG toward the higher frequencies in man, but to pain threshold in dogs (Kiessig and Orzechowski, 1941). Analgesia also occurs in man and amphetamine enhances the analgesia caused by morphine and meperidine and may decrease their sedative effects. It largely eliminates the analgesic action of nitrous oxide. Amphetamine has been used in conjunction with antipyretic analgesics, but a therapeutic advantage in the use of amphetamine for analgesia, either alone or given with other drugs, has not been established.

EEG. In general, amphetamine accelerates and desynchronizes the EEG. It causes a shift of the resting EEG toward the higher frequencies in man, but to a smaller degree than that occurring during attention. It reduces the amplitude and the duration of the large delta waves that are present during sleep after prolonged insomnia and in narcolepsy. The postconvulsive confusion and slow-wave EEG observed after electroshock seizures in monkeys are counteracted by amphetamine. In some children with petit mal and typical 3-per-second spike-and-dome dysrhythmia, amphetamine may abolish both the seizures and the abnormal EEG discharges; this may be due, in part, to an effect on alertness and activity. In children with behavioral disorders and abnormal EEG (6-cycle-per-second rhythm), amphetamine may improve behavior with or without altering the EEG. The EEG cannot be fully relied on as a criterion for the effects of amphetamine since the drug can cause behavioral arousal even when desynchronized by the EEG is prevented by atropine (Bradley, 1958). (*See* review by Toman and Davis, 1949.)

Spinal Cord, Recticular Formation, and Respiratory Center. Amphetamine facilitates monosynaptic and polysynaptic transmission in the spinal cord. In common with ephedrine, it enhances excitatory activity, promotes righting movements and postural activity, and speeds the recovery of responses in spinal, decerebrate, and decorticate animals. Amphetamine can reverse the depressant effect of barbiturates on the reticular formation, and it lowers the threshold for arousal by electrical stimulation of this region (Bradley and Key, 1958).

The *respiratory center* is stimulated by amphetamine in animals, and the rate and depth of respiration are increased. In normal man, usual doses of the drug do not appreciably increase respiratory rate or minute volume. Nevertheless, when respiration is depressed by centrally acting drugs, amphetamine may [illegible]ulate respiration, an action that has been used in the treatment of poisoning by anesthetics and hypnotics.

Depression of Appetite. Amphetamine and similar drugs are widely used in the treatment of amphetamine, first reported by Nathanson (1939), was investigated by Harris and associates (1947), who demonstrated loss of weight in dogs and in normal and obese humans treated with amphetamine. The weight loss was almost entirely due to reduced food intake and only in small measure to increased metabolism. It was concluded that the site of action was in the brain, since the drug did not reduce food intake in a small number of patients with frontal lobotomy and since sensory loss by denervation of the gastrointestinal tract in animals did not prevent the anorexigenic action. The precise central site of this action of amphetamine has not yet been established, but it may be in the lateral hypothalamic feeding area since the drug reduces food intake of rate with the ventromedial satiety area destroyed (Stowe and Miller, 1957). In man, some drug-induced loss of acuity of smell and taste has been described, and increased physical activity may also contribute to the loss of weight. In dogs, the effect is powerful and may lead to complete starvation if amphetamine is given each day 1 hour before the daily meal: food is refused even if offered for 45 minutes. Man, however, develops tolerance to the drug with continued administration. The degree of appetite suppression is not enough to reduce weight continuously in obese individuals without additional dietary restriction. Amphetamine has little effect of reducing food intake in those persons whose overeating is impelled by psychological factors.

Mechanisms of the CNS Effects. Several mechanisms for the CNS effects of sympathominetic amines have been suggested, each based on an analogy with known effects of these drugs on tissues other than the brain. Amphetamine depolarizes and then blocks cells in autonomic ganglia, and Reinert (1960) has suggested that a similar nicotine-like action may account for its central effects. This is unlikely, since ephedrine, which has similar although less marked central effects, does not share the depolarizing action of amphetamine. An indirect action by the local release of norepinephrine, as in peripheral tissue, has been suggested. However, amphetamine still exerts its central stimulant effects in animals and patients treated with reserpine, a drug that depletes the brain catecholamines. The possibility that amphetamine acts centrally by inhibiting MAO and thus enhancing the actions of brain norepinephrone has already been mentioned. There are many reasons to reject this hypothesis, among them the fact that amphetamine still stimulates subjects who have previously received MAO inhibitors. With amphetamine, as with other drugs, here is no advantage in postulating an indirect mechanism of action until a direct action on the cells has been disproved. The possibility that amphetamine may act on 5-HT receptors in the brain, as it does on several varieties of smooth muscle (Innes, 1963), has been discussed by Vane (1960). The central effects do not depend on changes in blood pressure and occur without an increase in total cerebral blood flow.

Metabolic Effects. Although large doses of amphetamine markedly increase oxygen consumption in animals, conventional therapeutic doses cause either no change, a small fall, or a modest rise (10 to 15%) in the metabolic rate in man. When an increase does occur, it is neither as constant nor as significant as that caused by epinephrone, but it is more sustained. Some patients show a slight increase in body temperature. The apparent calorigenic action may be due to restlessness caused by the drug. Amphetamine increases the plasma concentration of free fatty acids but, in contrast to epinephrine, does not modify carbohydrate utilization or increase blood glucose or laqtate, and the respiratory quotient is unaltered.

Preparations, Administration, and Dosage. *Amphetamine Sulfate*, N.F., is a white, water-soluble powder, available in 5- and 10-mg tablets. The *d* isomer is available as *Dextroamphetamine Phosphate*, N.F., in 5-mg tablets; and as *Dextroamphetamine Sulfate*, U.S.P. (DEXEDRINE), in 5-, 10-, and 15-mg capsules, in 5-mg tablets, in an elixir (1 mg/ml), and as an official injection (20 mg/ml). *Amphetamine base* is a volatile liquid that changes to the carbonate when exposed to air; it was formerly used in inhalers to treat nasal congestion. For this purpose it has been replaced by various sympathominetic amines that have considerably less central stimulant action. Amphetamine is marketed under a variety of trade names, perhaps the best known of which is BENZEDRINE.

With the usual oral dose of 2.5 to 5.0 mg of dextroamphetamine, the effects appear within ½ to 1 hour. The patient's sensitivity should first be tested with a dose of 2.5 mg. For chronic medication the usual dosage is 5 mg. two or three times daily. The last dose is generally given not later than 4 p.m. to avoid insomnia. For parental injection of amphetamine, the subcutaneous rouse is preferred. Vascular effects appear within 5 minutes. The usual dose of amphetamine is 10 mg, but larger doses are often given in treating poisoning by central depressants. Intravenous injection is not recommended. For local application, a 1% aqueous solution of amphetamine sulfate may be used as a mydriatic or as a nasal decongestant.

Toxicity and Side Effects. The *acute toxic effects* of amphetamine are usually extensions of its therapeutic actions and, as a rule, result from overdosage. The *central effects* commonly include restlessness, dizziness, tremor, hyperactive reflexes, talkativeness, tenseness, irritability, weakness, insomnia, fever, and sometimes euphoria. Confusion, assaultiveness, increased libido, anxiety, delirium, hallucinations, panic states, and suicidal or homicidal tendencies occur, especially in mentally ill patients. Fatigue and depression usually follow the central stimulation. *Cardiovascular effects* are common and include headache, chilliness, pallor or flushing, palpitation, cardiac arrhythmias, anginal pain, hypertension or hypotension and circulatory collapse. Excessive sweating occurs, and symptoms referable to the *gastrointestinal system* include dry mouth, metallic taste, anorexia, nausia, vomiting, diarrhea, and abdominal cramps. Fatal poisoning usually terminates in convulsions and coma, and cerebral hemorrhages are the main pathological finding.

The *toxic dose* of amphetamines varies widely. Toxic manifestations occasionally occur as an idiosyncrasy after as little as a mg, but are rare with doses of less than 15 mg. Severe reactions have occurred with 30 mg, yet doses of 400 to 500 mg have been survived. Death has followed rapid injection of 120 mg. Larger doses can be tolerated after chronic use of the drug.

Treatment of acute amphetamine intoxication should include acidification of the urine by administration of ammonium chloride. Excretion of amphetamine is negligible in alkaline urine, and is vastly increased in acid urine. Sedation with barbiturates and especially with chlorpromazine (Espelin and Done, 1968) is usually indicated, and a nitrite or a rapidly actng α-receptor blocking agent should be given if hypertension is marked.

Chronic amphetamine intoxication causes symptoms similar to those of acute overdosage, but abnormal mental conditions are more common. Weight loss may be marked, and occasionally dermatitis occurs. A psychotic reaction with vivid hallucinations and paranoid delusions, often mistaken for schizophrenia, is the most common serious effect. Recovery is usually rapid after withdrawal of the drug, but occasionally the condition becomes chronic. In these persons amphetamine may act as a precipitating factor hastening the onset of an incipient schizophrenia.

Precautions and Contraindications. Abuse of amphetamine by the laity as a means of overcoming sleepiness and of increasing energy and alertness should be discouraged. The drug should be used only under medical supervision. The additional *contraindications* and *precautions* in the use of amphetamine are generally similar to those described above for epinephrine. The drug should be used with care in patients with anorexia, insomnia, asthenia, psychopathic personality, or a history of homicidal or suicidal tendencies.

Addiction and Tolerance. *Addiction* often occurs to amphetamine and dextroamphetamine, as discussed in Chapter 16. *Tolerance* almost invariably develops to the anorexigenic effect of amphetamines, and it often seen also in the need for increasing doses to maintain improvement of mood in psychiatric patients. A period without the drug usually restores the patient's sensitivity. Tolerance is striking in addicts, and a daily intake of 1700 mg without apparent ill effects has been reported. Development of tolerance is not invariable, and cases of narcolepsy have been treated for years without an increase in the initially effective dose.

Therapeutic Uses. Amphetamine and dextroamphetamine are used chiefly for their CNS effects. They have been largely supplanted by other sympathomimetic agents for their peripheral effects. Dextroamphetamine, with greater CNS action and less peripheral action, is generally preferred to amphetamine; it is used in obesity, narcolepsy, parkinsonism, depressive syndromes, behavior disorders, and petit mal epilepsy, and in conjunction with supportive therapy for central depressant drug intoxication. These uses are discussed later in this chapter.

METHAMPHETAMINE

Methamphetamine is closely related chemically to amphetamine and ephedrine (Table 24–1). Its *pharmacological actions* are similar to those of amphetamine, but it exhibits a different ratio between central and peripheral actions. Small doses have prominent central stimulant effects without significant peripheral actions; somewhat larger doses produce a sustained rise in blood pressure due in main mainly to cardiac stimulation. Cardiac output is increased, although the heart rate may be reflexly slowed. The drug has considerable β-receptor activity, and increases blood flow in skeletal muscle. Peripheral venous pressure is increased and venous constriction occurs. These factors tend to increase the venous return and therefore, the cardiac output. Pulmonary arterial pressure is raised probably secondary to increased cardiac output. Renal blood flow is also enhanced. Although moderate doses stimulate cardiac contraction, excessive doses depress the myocardium. The cardiovascular effects of methamphetamine are compared with those of several other pressor amines in Table 24–3 (*see* Aviado, 1959; Ekestein and Abboud, 1962.)

Preparations and Dosage. *Methamphetamine Hydrochloride*, U.S.P., is the *d* isomer; it is marketed under a confusing number of trade names, including Desoxyn, Efroxine, Methedrine, Norodin, and Syndrox. It is available in tablets containing 2.5, 5, 7.5, and 8 mg. of drug; in sustained-release tablets containing 5, 10, and 15 mg; as an elixir (0.66 and 1 mg/ml); and in sterile solution (20 mg/ml). The usual oral dose for central effects varies from 2.5 mg. daily to 5 mg three times daily. For the pressor effect, a dose of 10 to 30 mg is given intramuscularly.

Therapeutic Uses. Methamphetamine is principally used for its *central effects* which are more pronounced than those of amphetamine and are accompanied by less prominent peripheral actions. It is also employed to maintain blood pressure in certain *hypotensive states* (*e.g.*, in spinal anesthesia). These uses are discussed below in the therapeutic section of this chapter.

TABLE 24-3.—EFFECTS OF SOME SYMPATHOMIMETIC AMINES THAT RAISE BLOOD PRESSURE BY ALTERING VASCULAR TONE OR CARDIAC OUTPUT, OR BOTH

	Effective doses in adult man (mg)	Heart rate—reflex activity		Force of cardiac contraction		Cardiac output	Coronary blood flow	Total peripheral resistance	Blood pressure—systolic/diastolic
		Normal	Blocked	Small doses	Large doses				
Epinephrine	0.5–1.0 s.c.	+ or −	+	+	+	+	+	−	+/−
Norepinephrine (Levarterenol)	0.002–0.008/min i.v. infusion	−	+	+	+	0 or −	+	+	+/+
Ephedrine	15–50 s.c., i.m., 8–10/min i.v.	+ or −	+	+	−	+	+	+ or −	+/+
Methamphetamine	10–30 i.v., i.m.	+ or −	+	+	−	+		0, +, or −	+/0
Mephentermine	10–30 i.v., i.m.	+ or −	+	+	−	+	+	+	+/+
Hydroxyamphetamine	5–10 i.v., 10–20 s.c.	+ or −	+	+	−	+	+	+	+/+
Metaraminol	5–10 i.v., i.m.	+ or −	+	+	−	0 or −	+	+	+/+
Phenylephrine	0.5–1.0 i.v., 5–10 s.c.	−	0	0	+	−	+	+	+/+
Methoxamine	5–10 i.v., 10–20 i.m.	−	0 or −	0	−	0 or −	0	+	+/+

Note: 0 = no effect; + = increased; − = decreased; s.c. = subcutaneous; i.m. = intramuscular; i.v. = intravenous. This compilation is from data obtained under various experimental conditions either in dogs or in normal human subjects. (Modified from Aviado, 1959, and Zaimis, 1964.)

EPHEDRINE

Ephedrine occurs naturally in various plants. It was used in China for over 5000 years before being introduced into Western medicine in 1924 (*see* Chen and Schmidt, 1930). Prepared synthetically in 1927, it has since been used extensively for clinical conditions in which either peripheral or CNS actions of sympathomimetic drugs are desired. Its central actions are less pronounced than those of the amphetamines, which have therefore superseded ephedrine for all except peripheral effects. Ephedrine stimulates both α and β receptors and has clinical uses related to both types of action. The drug owes part of its peripheral action to release of norepinephrine, but it also has direct effects on receptors and exhibits substantial effects in reserpine-treated animals and man (Krogsgaard, 1956). Tachyphylaxis develops to its peripheral actions, and rapidly repeated doses become less effective, probably as a result of the depletion of norepinephrine stores. Small doses of ephedrine increase and large doses reduce the excitatory effects of catecholamines and sympathetic nerve stimulation; the mechanisms involved, although much studied, are as yet incompletely understood.

Since ephedrine contains two asymmetrical carbon atoms, six compounds are possible. Only *l*-ephedrine and racemic ephedrine are commonly used clinically; their pharmacological properties and uses are essentially similar. The structure of ephedrine is depicted in Table 24–1.

Pharmacological Actions. Ephedrine differs from epinephrine mainly in its efficacy after oral administration, its much longer duration of action, its more pronounced central actions, and its much lower potency. *Cardiovascular effects* of ephedrine are in many ways similar to those of epinephrine, but they persist seven to ten times as long. The drug elevates the systolic and usually also the diastolic pressure in man, and pulse pressure increases. Pressor responses are due partly to vasoconstriction but mainly to cardiac stimulation, provided venous return is adequate. The heart rate may not be altered, but it increases if vagal reflexes are blocked. The force of myocardial contraction and cardiac output are augmented by the drug; the renal and splanchnic blood flows are decreased whereas the coronary, cerebral, and muscle blood flows are increased. The pressor responses to ephedrine are blocked by α-blocking agents, but reversal, if it occurs, is slight. The cardiovascular effects of ephedrine are compared with those of other sympathomimetic amines in Table 24–3. *Bronchial muscle* relaxation is less prominent but more sustained with ephedrine than with epinephrine. Consequently, ephedrine is of value only in milder cases of acute asthma and in chronic cases that need continued medication. *Mydriasis* occurs after local application of the drug to the eye. Reflexes to light are not abolished, accommodation is unaffected, and intraocular pressure is unchanged. Ephedrine and other sympathomimetics are of little use as mydriatics in the presence of inflammation. The drug is less effective in individuals who have heavily pigmented irides than in those in whom the iris is light colored, a difference attributed by Angenent and Koelle (1953) to a greater content of dopa oxidase and other enzymes in heavily pigmented irides. Other smooth muscles are generally affected by ephedrine in the same manner as by epinephrine nephrine. However, the activity of the human *uterus* is usually reduced by ephedrine, regardless of the effect of epinephrine, and thus the agent has been used to relieve the pain of dysmenorrhea. Ephedrine is less effective than epinephrine in elevating the level of *blood sugar*. The *central nervous system effects* of ephedrine are similar to of amphetamine but are considerably less marked.

Preparations, Administration and Dosage. *Ephedrine Sulfate*, U.S.P., is the *l* isomer. It is available in 25-mg tablets and in 25- and [illegible]0-mg capsules: the oral dose varies from 15 to 50 mg. For continued medication small doses are given at 3- to 4-hour intervals. Sterile solutions (25 and 50 mg/ml) are available; in hypotensive states, 15 to 50 mg may be given subcutaneously or, if a rapid response is necessary, 20 mg can be injected intravenously. Solutions of 1 and 3% in water and 1% in jelly are available for nasal mucosal decongestion, and aqueous solutions of 3 to 5% are applied to the eye to produce mydriasis.

Toxic Reactions. These are similar to the untoward reactions observed after epinephrine, with additional reactions referable to the CNS effects of ephedrine. Insomnia is common with continued medication, but it is readily counteracted by barbiturates. *Precautions* in the use of ephedrine are similar to those outlined for epinephrine and the amphetamines.

Therapeutic Uses. The main clinical applications of ephedrine are in *bronchospasm*, in *Stokes-Adams syndrome*, as a *nasal decongestant*, as a *mydriatic*, and in certain *allergic disorders*. The drug has also been employed as a *pressor* agent, particularly during spinal anesthesia, and for its central stimulant action in *narcolepsy*. These uses are discussed below in the therapeutic section of this chapter.

MEPHENTERMINE

Mephentermine is N-methylphenyl-*tertiary*-butylamine (Table 24–1). It is one of several pressor agents currently used in various hypotensive conditions. Its duration of action is prolonged, pressor effects lasting 30 and 60 minutes after subcutaneous doses and up to 4 hours after intromuscular doses. Its peripheral actions and effects appear to be very similar to those of methamphetamine, but its central actions are relatively feeble and of no clinical use. Mephentermine increases blood pressure in *man* mainly by cardiac stimulation. Cardiac contraction is enhanced and cardiac output increased. The change in heart rate is variable, depending on the degree of vagal tone. α-Receptor activity of the drug appears to be relatively weak, and its contribution to the pressor effect is as yet unclear. Peripheral resistance increases in normal subjects, but may be unchanged as lessened in patients with hypotension. In such patients the blood pressure may not increase in spite of a greater cardiac output, indicating a vasodilator effect (Udhoji and Weil, 1965). Cerebral and coronary blood flows are increased, forearm blood flow is reduced, and venous tone is increased. In *dogs*, coronary and splanchnic blood flows increase, there may be some reduction in renal blood flow, and blood flow to the foreleg is decreased: excessive doses depress the myocardium. Tachyphylaxis occurs readily with repeated large doses in dogs, but it has not been reported in man. Enough α-receptor activity (vasoconstriction) is present for the drug to be used by inhalation to cause nasal mucosal decongestion. CNS effects may occur with large doses of mephentermine. These include drowsiness, weeping, incoherence, and convulsions, and rapidly disappear on withdrawal of the drug. In Table 24–3 the cardiovascular effects of mephentermine are compared with those of some other pressor amines. (For references, *see* Aviado, 1959; Eckstein and Abboud, 1962; Zaimis, 1968.)

Preparations and Dosage. *Mephentermine Sulfate*, U.S.P. (WYAMINE), is available in sterile solution (15 and 30 mg/ml) for parenteral injection. Given *subcutaneously* or *intramuscularly* the dose is usually 10 to 30 mg. Slow *intravenous infusions* are also given, the rate being varied to produce the desired pressor effect. Oral tablets (12.5 to 25 mg) are also marketed.

Therapeutic Uses. Mephentermine is mainly used as a pressor agent in various *hypotensive states*, as discussed below in the therapeutic section of this chapter.

HYDROXYAMPHETAMINE

Hydroxyamphetamine, synthesized in Ger[illegible] clinical use only after reinvestigation 2 decades late[illegible], Alles and Prinzmetal, 1933). Its chemical structure differs from that of amphetamine only by the addition of a 4-OH group (*see* Table 24–1).

Pharmacological Actions. In many respects the actions of hydroxyamphetamine resemble those of ephedrine, with the exception that the drug almost entirely lacks CNS stimulant activity. The duration of action after oral or subcutaneous administration is from 90 to 120 minutes; after intravenous injection, 20 to 30 minutes.

Cardiovascular Actions. In man, as in other special, the drug elevates systolic and diastolic pressures; the increase is apparently due more to cardiac stimulation than to enhanced peripheral resistance, although the latter does occur. Heart rate is often reflexly slowed at the height of the pressor response, and cardiac irregularities, probably due to reflex vagal activity, have been reported. The cardiac stimulant action of the drug has been used to maintain an adequate ventricular rate in Stokes-Adams syndrome. Reflex vagal activity does not, of course, alter the effects of hydroxyamphetamine or other sympathomimetic drugs on the ventricle when complete heart block is present. In dogs, cardiac output and coronary blood flow increase, while cutaneous, splanchnic, and renal blood flows decrease. Pulmonary vessels are not constricted by the drug. The effects of hydroxyamphetamine on various vascular beds in man have not been established. Responses of cutaneous blood vessels in man are anomalous in that they are not effectively constricted by the drug, and systemic doses do not lower skin temperature. The duration of local anesthesia is not prolonged when the drug is injected with local anesthetics. However, hydroyamphetamine constricts the vessels of the nasal mucosa, and this property has been used clinically. Venous constriction may play a role in causing the pressor response (Stead and Kunkel, 1939). In Table 24–3 the cardiovascular effects of hydroxyamphetamine are compared with those of other pressor amines. (*See* Abbott and Henry, 1937; Iglauer and Molle, 1943; review by Aviado, 1959.)

Smooth Muscle. Hydroxyamphetamine exerts both α and β activity on smooth muscle. Actions on α receptors are put to effective clinical use for mydriasis, by instillation of the drug in the eye, and for nasal decongestion, by application of nasal drops or a spray. The β-receptor activity of the compound is reflected in relaxation of bronchial muscle, but this is too feeble to be of value.

Preparations and Dosage. *Hydroxyamphetamine Hydrobromide*, U.S.P. (PAREDINE HYDROBROMIDE), is available in 20-mg tablets and as a 1% ophtalmic solution. The oral dose in Stokes-Adams syndrome varies from 20 to 60 mg, three to five times daily.

Therapeutic Uses. The clinical applications, mainly in *hypotensive states*, in *Stokes-Adams syndrome*, *as a mydriatic*, and as a *nasal decongestant*, are discussed below in the therapeutic section of this chapter.

METARAMINOL

Metaraminol, 3-hydroxyphenylisopropanolamine (Table 24–1), is used almost exclusively for the treatment of hypotensive states. Its action is mainly direct and, therefore, does not depend on release of norepinephrine. It is primarily a pressor agent with actions similar to those of norepinephrine. but it is much less potent and has a more prolonged action. It lacks CNS stimulant effects. Metaraminol is absorbed after oral administration; however, for equal effects, oral doses must be five or six times greater than doses given intromuscularly or intravenously. The pressor effect of an intramuscular dose of 5 mg lasts for about 1½ hours.

Pharmacological Actions. The *cardiovascular* actions in man are reflected in a sustained rise in systolic and diastolic pressures, almost entirely due to vasoconstriction and usually accompanied by a marked reflex bradycardia. Occasionally sinus arrhythmia also occurs. In normotensive subjects, cardiac output it unchanged or may decrease slightly, but the force of myocardial contraction is enhanced. Cardiac output increases strikingly when slowing of the heart is prevented by atropine. Increased cardiac output may play a larger role in patients with hypotension and shock, in which conditions the drug increases cardiac output as well as peripheral resistance. Metaraminol increases venous tone and decreases renal and cerebral blood flows, the latter even when blood pressure is raised as much as 40%. In dogs, limb and splanchnic blood flows are also decreased and coronary blood flow is increased, but these effects have not yet been confirmed in man. Pulmonary vasoconstriction occurs in man, and the pulmonary blood pressure is elevated by the drug even when cardiac output in reduced. Systemic pressor responses to metaraminol appear to be mainly due to peripheral vasoconstriction, but cardiac stimulation can also be demonstrated and may play a small role in the pressor effect. In Table 24–3 the cardiovascular effects of metaraminol are compared with those of other sympathomimetic amines. (For references, see Aviado, 1959; Eckstein and Abboud, 1962; Zaimis, 1960.)

Preparations and Dosage. *Metaraminol Bitartrate*, U.S.P. (Aramine Bitartrate), is available in 1-ml ampuls and 10-ml vials as a sterile solution (10 mg/ml) for intramuscular injection, usually in a dose of 5 to 10 mg, or, after suitable dilution, for intravenous infusion. The rate of administration is regulated according to the individual's response to the drug. Subcutaneous injections should be avoided since tissue sloughing may occur.

Therapeutic Uses. The principal use of metaraminol is as a pressor agent in certain *hypotensive states*, the treatment of which is discussed below in the therapeutic section of this chapter.

PHENYLEPHRINE

Phenylephrine differs chemically from epinephrine only in lacking an OH in the 4 position on the benzene ring (Table 24–1). It was first studied by Barger and Dale (1910), but was not used clinically until years later when it was found to have greater potency than other monohydroxyl derivatives. Phenylephrine is a powerful α-receptor stimulant with little effect on the β receptors of the heart. A direct action on receptor accounts for the greater part of its effects, only a small part being due to its ability to release norepinephrine. Central stimulant action is minimal, and the clinical applications of the drug depend on α-receptor activity.

Pharmacological Actions. The predominant actions of phenylephrine are on the *cardovascular system* (*see* Table 24–3). Intravenous, subcutaneous, or oral administration causes a rise in systolic and diastolic pressures in man and other species. Responses are more sustained than those to epinephrine, lasting 20 minutes after intravenous and as long as 50 minutes after subcutaneous injection. Accompanying the pressor response to phenylephrine is a marked reflex bradycardia that can be blocked by atropine; after artopine, large doses of the drug increase the heart rate only slightly. In man, cardiac output is slightly decreased and peripheral resistance is considerably increased. Renal and cutaneous blood flows are reduced. Circulation time is slightly prolonged, and venous pressure is slightly increased; venous constriction is not marked. In experimental animals, most vascular beds are constricted, and cerebral, splanchnic, and limb blood flows are reduced but coronary blood flow is increased. Pulmonary vessels are constricted, and pulmonary arterial pressure is raised. Not all the effects of phenylephrine on the various vascular beds observed in experimental animals have yet been confirmed in man, but it is clear that the drug is a powerful vasoconstrictor, with properties very similar to those of norepinephrine but almost completely lacking the chronotropic and inotropic actions on the heart. Cardiac irregularities are seen only very rarely even with large doses, and the reflex slowing is sufficient to permit use of the drug to end attacks of paraoxysmal atrial tachycardia. (For references, *see* Aviado, 1959: Eckstein and Abboud, 1962.)

Preparations, Administration, and Dosage. *Phenylephrine Hydrochloride*, U.S.P. (isophirin, neosynephrine) is the *l* isomer. It is available as sterle solutons (2 and 10 mg/ml) for parenteral use, 10- and 25-mg oral capsules, an elixit (1 mg/ml), various nasal (0.125, 0.25, 0.5 and 1.0%) and ophthalmic (0.125, 2.5, and 10%) solutions, and an ophthalmic emulsion (10%). Roughly equipressor doses are 0.8 mg intravenously, 5 mg subcutaneously or intramuscularly, and 250 mg orally. However, absorption after oral administration is unreliable. For treatment of hypotension during spinal anesthesia, the usual dose is 5 to 10 mg, administered intramucularly. The rate of intravenous infusion in hypotentive states should be regulated according to the patient's response.

Therapeutic Uses. Pphenylephrine is used mainly as a *nasal decongestant*, a pressor agent in *hypotensive states a mydriatic*, a local vasoconstrictor (0.05%) in solutions of local anesthetics, and in the relief of *paroxysmal atrial tachycardia*. These uses are discussed below in the therapeutic section of this chapter.

METHOXAMINE

Methoxamine is β-hydroxy-β-(2,5-dimethoxyphenyl) isopropylamine (Table 24–1). Its pharmacological properties are almost exclusively those characteristic of α receptor stimulation. The outstanding effect is an increase in blood pressure due entirely to vasoconstriction. The drug has virtually no stimulant action on the heart and lacks β-receptor action on smooth muscle. It causes little or no central nervous system stimulation.

Pharmacological Actions. Methoxamine, given intravenously or intramuscularly in man, causes a rise in systolic and diastolic blood pressures that persists for 60 to 90 minutes. The pressor effect is due almost exclusively to an increase in peripheral resistance. Cardiac output is decreased or unchanged. Renal blood flow is reduced in man to a greater extent than after equipressor doses of norepinephrine or metaraminol. Cerebral, splanchnic, and limb blood flows are reduced in dogs, and coronary blood flow is unchanged; whether the effects are similar in man is not yet known. In man, the venous pressure increases, but the constrictor action on forearm veins is feeble. Methoxamine has no significant stimulant action on the heart, and does not increase the ventricular rate in patients with heart block. Reflex bradycardia is prominent, and, therefore, the drug is used clinically to relieve attacks of paroxysmal atrial tachycardia. When the vagal effects are blocked by atropine, methoxamine often slows the heart slightly. This residual slowing may be due to the β-receptor blocking property of methoxamine, as shown in dogs by Imai and associates (1961); this blockade would antagonize any direct cardioaccelerator effect of the drug. Methoxamine does not appear to precipate cardiac arrhythmias and can even improve rhythm in patients with certain ventricular arrhythemias due to myocardial infarction or digitalis toxicity (Brill *et al.*, 1959). In contrast to epinephrine, methoxamine prolongs ventricular muscle action potentials and refractory period and slows A–V conduction (Gilbert *et al.*, 1958). In Table 24–3 the cardiovascular effects of methoxamine are compared with those of other drug pressor amines. Tachyphylaxis to the drug occurs in experimental animals, but has not been reported in man. (*See* reviews by Aviado, 1959; Eckstein and Abboud, 1962; Zaimis, 1968.)

In man, pressor doses of methoxamine cause pilomotor stimulation and often a desire to micturate. Occasionally tingling of the extremities and a feeling of coldness follow intravenous injection of the drug.

Preparations, Administration, and Dosage. *Methoxamine Hydrochloride*, U.S.P. (Vasoxyl), is available in 1-ml ampuls (10 or 20 mg/ml) as a solution for intramuscular injection. The dose varies from 10 to 80 mg. Intravenous injections of 5 to 10 mg may also be given with the precautions properly accorded to intravenous injections of sympathomimetic amines. The drug is also marketed as a nasal solution (0.5%).

Therapeutic Uses. Methoxamine is almost solely used as a pressor agent in *hypotensive states* and to end attacks of *paroxysmal atrial tachycardia*. It is also employed as a nasal mucosal *decongestant*. These conditions are discussed below in the therapeutic section of this chapter.

METHOXYPHENAMINE

Methoxyphenamine, β-(*o*-methoxyphenyl) isopropylmethylamine, differs from methamphetamine only in having a methoxy substituent in the 2 position on the benzene ring (Table 24–1), but its pharmacological properties differ greatly. Its main sympathomimetic action is on β receptors of smooth muscle. By this action, the drug causes *bronchodilatation*, its usual clinical use. Its bronchodilator effect is greater than that of ephedrine, and the accompanying cardiovascular effects are considerably less. The α-receptor and central stimulant actions of the drug are minim[illegible]. Methoxyphenamine also exhibits weak antihistaminic properties.

Preparations and Dosage. *Methoxyphenamine hydrochloride* (ORTHOXINE HYDROCHLORIDE) is marketed in 100-mg tablets and in a syrup (10 mg/ml). The usual oral dose is 50 to 100 mg, repeated every 3 or 4 hours if necessary.

Therapeutic Uses. Methoxyphenamine is used mainly in mild cases of *asthma* and other *allergic conditions*, as discussed below in the therapeutic section of this chapter.

Nylidrin and isoxsuprine

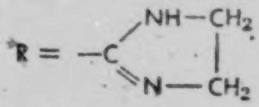
These two sympathomimetic agents are the outcome of a search for long-acting, highly selective, β-receptor stimulants that would dilate blood vessels supplying skeletal muscles and exert a minimum of other typical sympathomimetic actions. Both drugs have large substituents on the amino group (conferring β-receptor activity) and a methyl substituent on the side chain (permitting oral absorption and long action). Their chemical structures are shown in Table 24–1. The pharmacological actions of nylidrin and isoxsuprine are similar and typical of β-receptor stimulants. The main actions are dilation of blood vessels in skeletal muscle and stimulation of the heart. In normal subjects, the mean arterial pressure is little changed; systolic pressure is usually slightly raised, while diastolic pressure falls. Heart rate and cardiac output increase. Blood flow in muscle increases, and peripheral resistance falls. Nylidrin has also been reported to increase cerebral blood flow in man (Eisenberg, 1960). Both drugs relax smooth muscle in most organs, but this effect is insufficient for clinical use. The uterine relaxant action of isoxsuprine has been advocated for *dysmenorrhea* and *threatened premature labor*, but the value of the drug for these purposes has not been established. *Disturbing side effects* occasionally occur, including nervousness, trembling, weakness, dizziness, palpitation, nausea, and vomiting. Both drugs have been proposed for the treatment of a variety of *peripheral vascular disorders*. (*See* Freedman, 1955; Caliva *et al.*, 1959; Hyman and Winsor, 1969.)

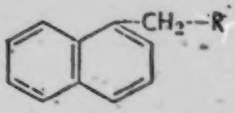
Preparations, Administration, and Dosage. *Nylidrin Hydrochloride*, N.F. (ARLIDIN), is available in 6-mg oral tablets. *Isoxuprine Hydrochloride*, N.F. (VASODILAN) is marketed as 10-mg oral tablets. Both are well absorbed after oral administration. The usual doses are 6 mg, three to six times daily, for nylidrin; and 5 to 10 mg, three or four times daily, for isoxsuprine. Both drugs are available in sterile solutions (5 mg/ml) for intramuscular injection; the dose is 2.5 to 5 mg for nylidrin and 5 to 10 mg for isoxsuprine.

Miscellaneous sympathomimetic drugs

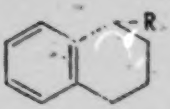
Several sympathomimetic drugs are used primarily as vasoconstrictors for local application to the nasal mucous membrane or the eye. Their structures are depicted in Tables 24–1 and 24–4. They cary from simple aliphatic amines to complex imidazoline derivatives. Their nonproprietary and trade names as well as available preparations are as follows: *Propylhexedrine*, N.F. (BENZEDREX), nasal inhaler (250 mg); *Tuaminoheptane Sulfate*, N.F. (TUAMINE), 1% nasal solution; *Naphazoline Hydrochloride*, N.F. (PRIVINE), 0.05% nasal jelly, nebulizer, or nasal solution and 0.1% ophthalmic solution; *Tetrahydrozoline Hydrochloride*, N.F. (TYZINEC), 0.05% nasal solution and 0.1% ophthalmic solution; *Oxymetazoline Hydrochloride*, N.F. (AFRIN), 0.05% nasal solution; *Xylometazoline Hydrochloride*, N.F. (OTRIVIN), and 0.95 and 0.1% nasal solution.

TABLE 24-4.—Imidazoline derivatives used as nasal decongestants

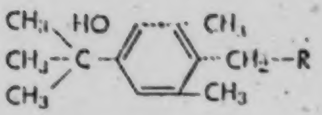




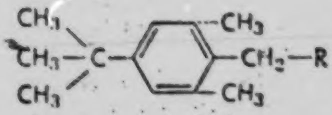
Naphazoline



Tetrahydrozoline



Oxymetazoline



Xylometazoline

Cyclopentamine Hydrocholride, N.F. (Clopane), is available as a 0.5 or 10% nasal solution. It has been used as a pressor agent and causes little central excitement. The intramuscular dose is 25 mg.

Phenylpropanolamine Hydrochloride, N.F. (Propadrine), shares the pharmacological properties of ephedrine and is approximately equal in potency except that it causes less CNS stimulation. The drug is marketed as such, and it is also the ingredient of numerous proprietary mixtures that are marketed for the oral treatment of nasal and sinus congestion, usually in combination with an antihistaminic drug.

Metaproterenol and *protokylol* are long-acting derivatives of isoproterenol. Like the parent compound they selectively stimulate β-receptors and are used as bronchodilators in the treatment of bronchial asthma. Compared with isoproternol, they are more stable in the body, a property permitting oral administration, and have a longer duration of action. Side effects are similar to those of isoproterenol. Given orally they may reduce the frequency and the severity of asthmatic attacks but do not abort an acute attack. Inhaled as an aerosol, metaproterenol acts as promptly and efficiently as isoproterenol, and remains effective for 3 to 6 hours (Holmes and Morgan, 1968). *Metaproterenol* (*Orciprenaline*, B.P. [Alupent]), is marketed in Europe as a 20-mg oral tablet, a syrup (2 mg/ml), a metered aerosol (0.75 mg per dose), a 5% inhalant solution, and a solution (0.5 mg/ml) for a parental use, but it is not yet available for general use in North America. *Protokylol* (Caytine) is available in 2-mg oral tablets, a solution for injection (0.5 mg/ml), and a 1% inhalant solution. Usual oral doses, given four times daily, are 20 mg for metaproterenol and 2 to 4 mg for protokylol. Intramuscular doses are 0.5 mg for metapreterenol, repeated after 30 minutes if necessary, and up to 0.5 mg for protokylol.

Dopamine (*3,4-dihydroxyphenylethylamine*) is the immediate precursor in the synthesis of norepinephrine in the body. It increases blood pressure in *man*, mainly by enhancing cardiac contraction. Peripheral resistance is not increased. Cardiac output, renal blood flow, and sodium excretion increase in normal subjects and in patients with congestive heart failure. The renal vasodilatation, which is unusual in that it is not blocked by either α- or β-blocking agents, presents possible advantages in the treatment of hypotension and shock, and the drug is being used experimentally for these conditions. (*See* MacCannell *et al.*, 1966.) Its possible role in basal ganglia function is discussed elsewhere (see *Index*).

THERAPEUTIC USES OF SYMPATHOMIMETIC DRUGS

As a result of the ubiquitious distribution of sympathetic nerves and adrenergic receptor systems in the body and their involvement in a variety of clinical disorders, and because sympathomimetic agents not only exhibit α- and β-receptor activity but also exert, in several instances, prominent CNS excitatory effects. It is not surprising that drugs in this class have a large number of important therapeutic uses. These clinical applications are considered in the following pages, under appropriate hearings related both to the disease states and to the locus and mechanism of action of sympathomimetic drugs.

Use of Vascular Effects. *Control of Hemorrhage.* The vasoconstrictor action of epinephrine may control superficial hemorrhage from skin and mucous membranes when the drug is applied toically as a spray or on cotton or gauze pledgets. It is effective only against bleeding from arterioles and capillaries and does not control venous oozing or hemorrhage from larger vessels. Obviously there is no rationale for systemic use of the drug in internal hemorrhage. Given orally in gastric hemorrhage, it is of questionable value and can act only locally by constricting small mucosal vessels. Sympathomimetics other than epinephrine are seldom applied to bleeding surfaces.

Decongestion of Mucous Membranes. Sympathomimetic amines with α-receptor action cause marked vasoconstriction and blanching when applied to nasal and pharyngeal mucosal surfaces. They are therefore useful in the treatment of mucosal congestion accompanying *hay fever, allergic rhintis, acute coryza, sinusitis*, and other respiratory conditions. The short duration of action of many of the amines, such as epinephrine, limits their value in shrinking the nasal mucosa, and longer-acting congeners are more commonly used in these conditions. Some of the sympathomimetic amines more widely used for nasal decongestion are indicated in Table 24–4 and as *N* in Table 24–1. All have the disadvantage that their use may be followed by "aftercongestion" and that prolonged use often results in chronic rhinitis. Some (*e.g.*, naphazoline) also irritate the nasal mucosa, causing a brief but sharp stinging sensation when first applied. Naphezoline and tetrahydrozoline should not be administered to children, since CNS depression leading to coma and marked reduction in body temperature may occur, especially in infant. CNS depression has not been reported with oxymetazoline or xylometazolien, which have the imidazoline group common in the two above-mentioned nasal decongestants but lack the naphthyl group. The structural similarity suggests that these drugs should not be used in children. Amphetamine was formerly used widely as a nasal decongestant, but inhalers containing this drug were withdrawn from use, since they provided a ready supply of the drug for abuse of its euphoric effect. Some nasal decongestants and their usual concentratoins as nasal drops or spray are as follow: amphatemine, 1%; ephedrine, 1%, hydroxyamphetamine, 1%; mephentermine, 0.5%; methoxamine, 0.5%; naphazoline, 0.05%; oxymetazoline, 0.05%; phenylephrine, 0.25%; tetrahydrozoline, 0.1%; and xylometazoline, 0.1%. Propylhexedrine and tuminoheptane are marketed in inhalers containing the volatile base.

Epinephrine is used in many surgical procedures on the nose, throat, and larynx to shrink the mucosa and improve visualization by limiting hemorrhage. Since epinephrine is relatively nonirritating, it is especially suitable for use in treatment of congestion of the conjunctiva.

The efficacy of locally applied sympathomimetic vasoconstriction in shrinking the nasal mucosa has led to the use of amines that may have this effect when given orally. Since the vessels of the nasal mucosa have not been shown to be more sensitive than most other vessels to sympathomimetic drugs, doses of orally administered sympathomimetics large enough to afford relief from nasal congestion will be expected to constrict other vascular beds and to raise the blood pressure. Ephedrine and pseudoephedrine have been given orally as nasal decongestants; their effects on nasal congestion due to colds are not of much consequence but *allergic rhinitis* often responds well. While they do not raise blood pressure to any marked extent in doses that have this decongestant effect, they redistribute blood flow and cause cardiac stimulation. Several oral preparations promoted for the relief of colds and other upper respiratory conditions contain a sympathomimetic amine in combination with a variety of other agents (*e.g.*, antihistamines, antimuscarinic drugs, antipyreticanalgesics, caffeine, antitussives). Benefit from these blunderbuss preparations depends largely on the effects of the other drugs. In addition, the placebo effect in improving the patient's feeling of well-being should not be underestimated. No convincing evidence of benefit from oral use of sympathomimetics to relieve nasal congestion in colds has yet been presented.

Use with Local Anesthetics. Epinephrine is widely used in concentrations of 1:100,000 to 1:20,000 in solutions of local anesthetics. It slows absorption of the local anesthetic by local vasconstriction and thus prolongs the duration of anesthesia, decreases the amount of anesthetic needed, and lessens the danger of systemic toxicity. Furthermore, hemorrhage from surgical procedures in the area of infiltration is decreased. However, careful surgical hemostatis is more necessary than ever because small vessels, which have been cut but are constricted by epinephrine, may escape detection. Stronger concentrations may cause tissue damage from ischemia. The total amount of epinephrine injected with a local anesthetic solution should not exceed 1 mg. Small amounts of epinephrine can also be added to the local anesthetic solution injected intrathecally for spinal anesthesia. Here also it delays absorption of the local anesthesia. Since epinephrine is the most potent α-receptor stimulant, smaller concentrations of epinephrine than of any other sympathomimetic have been added to local anesthetic solutions in the past, but only nordefrine and phenylephrine are now used as alternative to epinephrine. The combined use of epinephrine and local anesthetics is further discussed in Chapter 20.

Hypotension. The use of sympathomimetic amines to relieve hypotension occuring during spinal anesthesia and after sympathectomy, or from overdosage of ganglionic blocking agents antiadrenergic agents, or veratrum alkaloids has a rational basis in temporarily constricting resistance vessels relaxed by release from adrenergic vasconstriction. Such use has given satisfactory results. Agents with predominantly α-receptor action are clearly the most suitable for this purpose, but levarterenol is not frequently used because its intravenous administration demands attention that is not necessary with sympathomimetics that can be given intromuscularly.

Given before *spinal anesthesia*, intramuscular injections of ephedrine, hydroxyamphetamine, mephentermine, metaraminol, methamphetamine, methoxamine, or phenylephrine are often effective in preventing a substantial fall in blood pressure (*see* Aviado, 1959). Where hypotension is marked in spite of the initial prophylactic injection, a second intramuscular dose may be required to restore blood pressure. However, if the operative conditions permit, the blood pressure may usually be restored to an acceptable level without drugs by tilting the operating table to elevate the legs and thereby improve the venous return to the heart. Persistent hypotension during operation usually indicates hypovolemia and should be treated by replacement of the circulating blood volume with blood or plasma volume expanders. Treatment with sympathomimetic is unwise in cases of hypotension occurring in patients under *general anesthesia* with cyclopropane, halothane, and other drugs that sensitive the heart to the arrhythmic action. Even the feeble cardiac-stimulant action of phenylephrine may then be enough to precipitate ventricular arrhythmias. If administration of a pressor drug appears to be imperative, the choice of a sympathomimetic should be limited to one with minimal cardiac excitatory actions, such as phenylephrine or methoxamine. Methoxamine has been reported to inhibit the development of cardiac arrhythmias, perhaps by its β-receptor blocking action.

Administration of sympathomimetic agents for their pressor effect may be a useful *emergency measure* until other therapy can be instituted in certain hypotensive states (e.g., in acute hemorrhage). Sympathomimetics may be used to raise the blood pressure and sustain the coronary and cerebral circulation until measures can be taken to restore an adequate circulating blood volume. However, this therapy must be regarded as only a temporary expedient that can obscure the extent of blood volume replacement required and can in itself cause loss of fluid from the vascular compartment. Vasopressor therapy can thus increase the risk of further circulatory deterioration.

The release of large amounts of catecholamines during operation on patients with *pheochromocytoma* can lead to a considerable decrease in the circulating blood volume, and the blood pressure may drop precipitously as soon as the tumor has been removed. Levarterenol infusion has been used to sustain the blood pressure postoperatively, but adequate fluid-volume replacement appears to be more rational therapy. Alternatively, the loss of circulating volume can be largely prevented and the postoperative fall in pressure much reduced or eliminated by inhibiting the vasoconstriction due to released catecholamines with an α-adrenergic blocking agent (*see* Chapter 26).

The blood pressure of patients with *orthostatic hypotension* due to various factors, including neurological diseases such as syringomyelia and tabes dorsalis, may be supported by treatment orally with ephedrine, amphetamine, or other long-acting pressor sympathomimetic agents. However, responses are highly variable and control of the blood pressure in these conditions remains a very difficult problem.

Shock. Intravenous infusions of levarterenol or of other sympathomimetics have been widely used in the treatment of shock associated with trauma, hemorrhage, speticemia, or myocardial infarction. This treatment is directed toward raising the blood pressure on the assumption that this will improve nutrition of vital organs. The rationale, however, is questionable. Shock of other than cardiogenic etiology is usually characterized by a relative deficiency in circulating blood volume, and compensatory mechanisms will have already initiated intense peripheral vasoconstriction. Renal and splanchnic blood flows are already much reduced, and further vasoconstriction in these regions by the action of a sympathomimetic can seriously impair the blood supply to the kidney, liver, and other vital organs. In addition, it is probably of importance that sympathomimetic vasoconstriction can itself reduce circulating blood volume. Continuous infusion of levarterenol in animals can cause lethal shock, and the injudicious use of this drug or other sympathomimetic agents in man can produce the same effect. (Spoerel *et al.*, 1964). The first consideration in the treatment of most types of shock should be adequate replacement of blood volume; this tends to reduce sympathetic tone and restore adequate circulation to vital areas. Administration of an α-adrenergic blocking agent may supplement fluid therapy in some cases by further reducing adrenergic vasoconstriction. This aspect of shock therapy is discussed in Chapter 26. Successful results in treating shock with levarterenol or other vasopressor agents are the subject of many reports; however, assessment of such results is notoriously difficult, and it is seldom clear whether survival was due to or in spite of this treatment. (*see* Nickerson, 1962).

Shock following *myocardial infarction* differs in that reduced cardiac output is probably primary and not, as in other types of shock, secondary to inadequate venous return. A suitable vasopressor agent can raise the blood pressure although the latter point has not been proved unequivocably. The elevated blood in most cases of myocardial shock and may somewhat improve survival, pressure increases coronary flow and presumable the nutrition of uninvolved myocardium and areas of marginal viability. However, it also increases the myocardial work required for any given level of cardiac output, and the effect of sympathomimetic vasopressor agents on the balance between these two opposing agents on the balance between these two opposing factors doubtless varies with patients. Sympathomimetic agents that stimulate the heart are generally agreed to be the most appropriate therapeutic agents, but myocardial infarction predisposes to the arrhythmic action of these drugs. It is undecided whether sympathomimetics that cause peripheral constriction in addition to myocardial stimulation are more effective. Isoproterenol and mephentermine stimulate the heart without causing peripheral vasoconstriction; levarterenol and metaraminol have both actions. Both types of agent have strong advocates, but the fact that other agents, including dopamine, are being tested reflects the inadequacy of the presently used drugs. Metabolic acidosis due to poor tissue perfusion adds to the cardiac depression and should be corrected. It also inhibits the cardiac response to norepinephrine but not to isoproterenol (Silberschmid *et al.*, 1968). Isoproterenol may therefore be a better choice if severe acidosis is present. Additional measures may include the use of α-blocking agents if vasoconstriction is severe. These may aggravate the hypotension, leaving the indication for myocardial stimulation unchanged. For patients with inadequate venous return, a plasma volume expander may also be used, with due care to avoid circulatory overload leading to acute heart failure. Despite all measures, therapy of myocardial shock has only limited success and the mortality rate remains very high. (*See* Kuhn, 1967.)

Peripheral Vascular Disease. Nylidrin and isoxuprine, long-acting, orally effective sympathomimetic amines with predominant β-receptor action, have been used in the treatment of intermittent claudication due to peripheral vascular disease. Although both drugs increase the resting flow of skeletal muscle in normal persons, clinical results have been disappointing, probably due to the fact that control of the blood flow in skeletal muscle normally depends largely on dilatation of the blood vessels by locally produced metabolites. Such metabolites maximally dilate the blood vessels before symptoms of claudication appear. There is no evidence that blood vessels maximally dilated by local factors can be further dilated by sympathomimetics. In addition, only those vessels least affected by the pathological changes in diseases such as arteriosclerosis obliterans can be expected to dilate, and benefit can be obtained only when there is an element of arteriolar spasm. This view is supported by a study made by Caliva and associates (1959) on the effects of nylidrin in normal persons and in patients with peripheral vascular disease. Doses of nylidrin that normally increased blood flow in the calf by 33% had no effect on the blood flow in eight patients with arteriosclerosis obliterans; in patients with venous disease and segmental atherosclerosis, the flow at rest was increased but there was no improvement in tolerance to walking. There is no rational basis for the use of these drugs in conditions where the blood supply to the skin is reduced, since their effects on cutaneous blood flow are negligible.

The use of nylidrin has been proposed to increase cerebral blood flow in cerebrovascular disease. However, it is not likely that severely sclerotic cerebral vessels are capable of dilatation. In addition, the degree of dilatation of cerebral vessels depends largely on local factors that will already have induced the greatest dilatation of which these vessels are capable. No evidence of improvement due to nylidrin has been found in patients with long-standing hemiplegia; the value of this type of therapy has not been assessed in recent cerebral infarction (Eisenberg, 1960).

Use of Reflex Cardiac Effects of Pressor Drugs. Attacks of *paroxysmal acrial or nodal tachycardia* may be ended by reflex vagal discharge caused by pressor responses to phenylephrine or methoxamine, drugs without significant cardiac excitatory action. The dose, given slowly intravenously, should not raise the blood pressure above 160 mm Hg; for phenylephrine, the dose may be 0.15 to 0.8 mg; for methoxamine, 3 to 5 mg. These drugs have the advantage over parasympathomimetic agents in that they produce fewer unpleasant effects.

Use of Cardiac Effects. *Cardiac Arrest* and *Heart Block with Syncopal Seizures.* Syncope in *Stokes-Adams syndrome,* generally occurring at the transition from partial to complete A-V block, may be due to ventricular standstill or to prefibrillatory rhythm leading to ventricular fibrillation. Epinephrine and isoproterenol are of value in prophylaxis and symptomatic treatment of the attacks, but physical measures should be applied first in the acute attack. Circulation may sometimes be restored by a precordial blow followed by external cardiac compression or, if readily at hand, by an electrical pacemaker or defibrillator. Next, cardiac puncture with or without intracardiac injection of epinephrine may be effective and, as a last resort, thoracotomy and manual cardiac massage may rarely be required. External cardiac massage by compression of the chest can maintain circulation for considerable periods. To restore the intrinsic cardiac rhythm once some circulation has been reestablished, intravenous infusion of epinephrine or isoproterenol may be necessary. These catecholamines are likely to precipitate ventricular fibrillation if injudiciously used in patients with prefibrillatory rhythm, and therefore, extreme care should be taken in their *intravenous* administration. When the indications are less urgent, repeated subcutaneous injections of epinephrine, intramuscular injections of epinephrine in oil, or sublingual doses of isoproterenol may give the desired results. Epinephrine has been used to maintain an adequate ventricular rate (30 to 40 beats or more per minute) for as long as a week, but other sympathomimetic amines are more suitable for prolonged and prophylactic treatment. Isoproterenol can be given sublingually or in sustained-action oral tablets, but absorption, especially after its oral administration, is unreliable. Ephedrine and hydroxyamphetamine are both orally effective and longer acting. Either can prevent recurrence of syncopal attacks. However, drug therapy is now regarded as a temporary measure only to be used until an electrical pacemaker can be fitted to supply optimal and reliable ventricular regulation.

The problem of reviving patients apparently dead from *drowning, electrocution,* and *anesthetic accidents* is not substantially different from that of the syncope in Stokes-Adams syndrome, and the same principles apply. In all cases of cardiac arrest, hypoxia is an important additional factor necessitating adequate artificial ventilation. Anesthetic cardiac accidents may be due either to asystole or to ventricular fibrillation. Since the heart is sensitized to the arrhythmic action of epinephrine by many anesthetics, the drug may convert asystole to ventricular fibrillation. Physical measures, especially the use of an electrical pacemaker, which should be available in the operating room, are obviously more appropriate. Electrical countershock followed by mechanical compression of the heart is indicated in ventricular fibrillation. Although the use of epinephrine in anesthetic accidents is theoretically inadvisable in cardiac arrest or after defibrillation, many patients have recovered when the drug has been administered. It is impossible to decide whether recovery is due to the drug, to mechanical stimulation of the myocardium by the needle prick, or to other procedures simultaneously applied. Recovery from such anesthetic accidents is achieved in less than 25% of cases; in patients who do not respond to other measures, it is not unreasonable to resort to the cardiac excitatory action of epinephrine. (*See* Bellet, 1960; Zoll and Linenthal, 1963; and many others.)

Acute Cardiac Failure. The treatment of acute cardiac failure does not include the use of epinephrine or other sympathomimetic drugs. The drug treatment of the acute attack of left-heart failure characterized by "*cardiac asthma*" or *pulmonary edema* is primarily with morphine, aminophylline, and oxygen. Emergency treatment with epinephrine to stimulate the heart should be avoided, since this procedure increases the demand of the heart for oxygen. A more effective and rational emergency measure is the application of venous tourniquets to the limbs, thereby reducing venous return and decreasing the load on the heart. A mistaken diagnosis of dyspnea due to bronchial asthma has sometimes led to treatment of cardiac asthma (dyspnea due to left ventricular failure) with epinephrine, in some cases with benefit. This can be expected only when there is a degree of bronchospasm superimposed on the basic pulmonary vascular congestion due to the cardiac failure and cannot be relied on as a basis for routine treatment of acute cardiac failure with epinephrine.

Uses in Allergic Disorders. *Bronchial Asthma.* Epinephrine and isoproterenol, drugs with a powerful action on β receptors, are the mainstay of the symptomatic treatment of respiratory distress due to bronchospasm. Acute asthmatic attacks are usually relieved within 3 to 5 minutes after subcutaneous injection in 0.2 to 0.5 mg of epinephrine. The decrease in vital capacity and increase in residual air characteristic of these attacks are rapidly corrected. Vital capacity, maximum breathing capacity, and velocity of air movement, especially in the expiratory phase, increase equally well after peroral inhalation of a 1% solution of the drug from a nebulizer, and many clinicians now use this method of administration, often with an intermittent positive-pressure breathing machine, in preference to parenteral injection. Although airway obstruction is relieved the lowered P_{O_2} is generally not increased, indicating that the ventilation-perfusion disturbance is not remedied (Palmer and Diament, 1967). Relief with epinephrine is due to the β-receptor action, which relaxes bronchial smooth muscle, and to the α-receptor action, which constricts bronchial mucosal vessels and thereby reduces congestion and edema. Since epinephrine inhalation shows no obvious superiority to isoproterenol inhalation in relieving the acute attack, the major part of the benefit is probably due to their common relaxant action on bronchial muscle. Although isoproterenol is the more potent cardiac stimulant, palpitation after inhalation of isoproterenol appears to be less disturbing than after epinephrine.

Whatever the drug or route of administration, the smallest dose affording relief should be used. Smaller doses given early in an attack are more effective than larger doses given later. Inhalations of isoproterenol or epinephrine may have to be repeated at intervals of 2 or 3 minutes, and subcutaneous injections of epinephrine may have to be given at 15- to 20-minute intervals until relief occurs. If symptoms recur, massage of the site of injection may give relief by enhancing absorption of the drug. *Very slow intravenous infusion* of epinephrine has been used in patients who failed to respond to subcutaneous injection, but *this procedure is hazardous* and presents no advantage over the simpler and much safer method of aerosol inhalation, which applies the drug in the greatest concentration where its actions are desired, provided mucus plugs do not completely block constricted regions and proper technics of administration are used. Tolerance to epinephrine may occur after repeated use, and larger doses are then needed.

Epinephrine refractoriness is not uncommon in protracted severe cases and in status asthmaticus. In such cases bronchospasm is often secondary to or associated with the presence of viscid mucus plugs in the bronchi, and the action of epinephrine in reducing bronchial secretion may have an adverse effect by making these plugs more viscid and difficult to dislodge. Measures to facilitate removal of mucus plugs are important in these cases and include expectorants and increased hydration of the patient to liquefy the plugs, and mechanical removal of retained secretion by bronchoscopic suction. Suitable chemotherapy is used to combat respiratory infection when this common precipitating cause is present. The element of bronchospasm secondary to the presence of plugs may often be relieved by inhalation of epinephrine or isoproterenol as an aerosol, even in patients in whom subcutaneous epinephrine has failed.

Pressurized aerosols containing isoproterenol or epinephrine have been available for several years and are widely accepted as an effective and convenient therapy. In several countries the mortality from asthma has recently increased, an increase that coincides with the growing use of pressurized aerosols (Speizer *et al.*, 1968). Although the use of sympathomimetics has not been established as the basis of the increased mortality, these drugs can cause several kinds of cardiac toxicity, as already discussed. Development of compounds such as *α*-[(*t*-butylamino)methyl]-4-hydroxy-*m*-xylene-α',α^3-diol (SALBUTAMOL), which appear to act primarily on β_2 receptors and thus are powerful bronchodilators with little action on the heart, may obviate the problem of cardiac toxicity: however, a drug of this type is not as yet available for general use. Excessive use of the aerosols should be discouraged, and therapy should be supplemented by the other procedures outlined.

In cases of *refractory asthma*, intravenous injection of aminophylline is sometimes useful, but intravenous injections of adrenocorticosteroids is often required to break into the severe asthmatic cycle. Because of the serious side effects of prolonged use of such steroids (*see* Chapter 72), their administration should be discontinued as early as practicable; fortunately, such discontinuation is possible in virtually all cases. Withdrawal from steroids becomes exceptionally difficult if delayed. Susceptibility to small doses of epinephrine and other sympathomimetic amines is usually restored once repeated and progressive bronchial relaxation has been achieved. For prolonged relief from bronchospasm, usually in chronic asthma, *epinephrine in oil* is sometimes used, and a dose of 1 ml may permit a night's sleep free from attacks. The longer-acting oral sympathomimetics with prominent β-receptor action are commonly used to prevent attacks. Ephedrine, 20 to 50 mg given at 4-hour intervals, is an effective prophylactic. Methoxyphenamine, metaproterenol, and protokytol are effective but more expensive substitutes. The CNS stimulant action of ephedrine tends to cause wakefulness and irritability, and a barbiturate is commonly given in addition. Many drug mixtures have been proposed for the treatment of asthma; they have the obvious disadvantage of all mixtures in that the dose of each ingredient cannot be individually regulated to the patient's specific and changing requirements.

Miscellaneous Allergic Disorders. Epinephrine is the drug of first choice to relieve the symptoms of acute hypersensivity reactions to drugs (*e.g.*, penicillin) and of the other acute reactions to sera and other allergens. A subcutaneous injection of epinephrine rapidly relieves itching, urticaria, and swelling of lips, eyelids, and tongue, and the drug may be lifesaving when edema of the glottis threatens suffocation. Only epinephrine is administered to relieve these acute reactions since it acts particularly rapid; however, ephedrine, having a more prolonged action, can be used for the continued treatment of allergic disorders, such as hay fever. Epinephrine may also give symptomatic relief in certain forms of eczematoid dermatitis. When skin tests are performed for hypersensitivity to various foods, drugs, pollens, or other allergens, epinephrine should always be at hand to control acute untoward reactions. If chronic medication with ephedrine is being given for at least 12 hours before sensitivity tests are made; otherwise, positive reactions may be prevented. When conjunctival tests for serum or drug hypersensitivity are made, epinephrine solution instilled into the eye readily controls the local discomfort of positive reactions.

Ophthalmic Uses. Local application of various sympathomimetic amines to the conjunctiva is used to dilate the pupil, mainly to permit adequate examination of the fundus. The mydriatic effect of these drugs, notably ephendrine (3 to 5%), amphetamine (1%), hydroxyamphetamine (1 to 3%), and phenylephrine (1 to 2%), lasts for only a few hours, in contrast to the long duration of action of the belladonna alkaloids. The sympathominmetics have the additional advantage that they do not cause cycloplegia and usually do not increase introcular pressure. Sympathomimetic mydiatics are also used to reduce the incidence of posterior synechiae in uveitis, and epinephrine (1 to 2%) or phenylephrine (10%) is used to treat open-angle glaucoma, reducing the introcular pressure by their local vasoconstrictor action, which decreases production of aqueous humor.

Uses of Central Effects. Apart from a series of drugs used only as anorectics (*see* below), the main sympathomimetics used for central effects are ephendrine, amphetamine, dextroamphetamine, methamphetamine, and mephaentermine. Of these, dextroamphetamine and methamphetamine are most widely employed. The peripheral actions of ephedrine, mephentermine, and, to a lesser extent, amphetamine are disproportionately great, and central effects cannot be obtained without side effects from the peripheral actions.

Narcolepsy. Ephedrine, amphetamine, and dextroamphentamine have been used to treat narcoleptic patients. The amphetamines largely prevent attacks of sleep in nearly all patients, and cataplexy is often much improved. The usual dose of dextroamphetamine varies from 30 to 50 mg daily, in divided portions, the last dose being taken not later than 4 P.M. so that that nocutrnal sleep is not prevented. Tolerance does not appear to develop to these agents in the treatment of narcolepsy.

Postencephalitic Parkinsonism. Dextroamphetamine is of considerable value in relieving the symptoms of parkinsonism. It has little effect on tremor, but decreases rigidity in many patients and frequently relieves *oculogyric crises.* The drug brings about a better sleep cycle, a subjective improvement in muscle strength and rigidity, and elevates the mood, a most important objective in the treatment of these patients. Dextroamphetamine is especially valuable when given in conjunction with a belladonna alkaloid or with certain of the synthetic antiparkinsonism drugs. There is little improvement when organic defects are marked and in arteriosclerotic parkinsonism, and accompanying personality changes and psychotic states are not always helped. The total daily dose varies from 10 to 50 mg or more. In certain other diseases of the extrapyramidal system, such as *spasmodic torticollis* and spasmodic movements of a limb, dextroamphetamine may relieve symptoms.

Obesity and Weight Reduction. Whatever the etiology of obesity, a factor common to all cases is necessarily an intake of food that supplies more energy than the body uses. Of the two possible measures to correct this imbalance, attempts to reduce food intake have been more popular in Western civilization. Persistent dietary restraint has proven both essenital and difficult to acheive, and various sympathomimetic and related drugs that depress appetite have been used to make a low-calorie diet more tolerable. These appetite depressants are of no value without an accompanying stringent dietary regimen, and it has been regularly demonstrated that, without consistent supervision, no prescribed regimen of drug or diet is predictably successful. Several factors have a part in determining this unsatisfactory situation. In many patients the etiology of obesity is psychological, and compulsive overeating is difficult to eradicate even with psychiatric help: The central effects of anorexia and wakefulness have proven inseparable in all currently available anorectic drugs. This prevents their use in the latter part of the day; given after 4 P.M., they interfere with sleep at night. Since much of the overeating takes place in the evening, their value is obviously limited. The anoretic agents are often given with a barbiturate to overcome this difficulty, but without conspicuous success. In addition, tolerance develops with a few weeks and increased dosage is limited both by the peripheral actions that these drugs exert and by such symptoms of central stimulation as nervousness and irritability. Even during the early period of administration, peripheral effects, although seldom pronounced, are rarely completely absent. However, the use of an anorectic by obese individuals who are well motivated to reduce their food intake may ease the discomfort of adherence to a restricted diet, and may be of help in the earlier part of a regimen while new dietary patterns are being established. Drugs used in obesity are listed in Table 24–5; none has as yet proven to be superior to dextroamphetamine or methamphetamine, either in effectiveness or in lack of side effects. In contrast to other amphetamine derivatives, fenfluramine (Table 24–1) causes drowsiness and does not interfere with REM sleep. This drug is used in Europe and may prove more acceptable for evening use, but it is not yet available in North America. (*See* Modell, 1960.)

Depressant Drug Poisoning. The value of amphetamines and other analeptic agents in treating poisoning by central depressant drugs has been the subject of much debate. The central stimulant sympathomimetics can lessen the degree of depression caused by moderate doses of anethestics and hypnotics, but it is questionable whether they have any significant effect in persons poisoned with large doses of depressants. There is little need for their use in patients with adequate respiration and active reflexes. In patients in whom central depression is greater, maintenance of adequate ventilation and general measures to support the circulation should be the primary objective. There is little evidence that this objective is better attained when a sympathomimetic or other analeptic is added to supportive measures. However, if a central stimulant is to be used, an agent such as dextroamphetamine is probably easier to control and poses less hazard to the patient than do most other types. This subject is further discussed elsewhere (*see* Index).

Psychogenic Disorders. A large and controversial literature has accumulated concerning the use and value of amphetamine and dextroamphetamine in a variety of mental diseases. These drugs have been used in mild mental disorders such as mood disturbances, chronic nervous exhaustion, and psychoneuroses, as well as in major psychoses such as schizophrenia and the depressed phase of manic-depressive psychosis. Children with behavior problems generally become more easily managed. This is particularly true in certain cases of *hyperkinesis* in children; the basis for improvement is not understood, and the phenomenon is often referred to as the "paradoxical effect" of amphetamines. The immediate results may be quite satisfactory in cases of simple depression and chronic exhaustion; in some instances improvement may be spectacular. Some patients with the depressed type of manic-depressive psychosis may be improved, but endogenous depression is not relieved and may be aggravated. Anxiety states may be worsened, and patients with involutional melancholia do not respond well. Apathy in some cases of schizophrenia may be favorably influenced, but these drugs cannot be regarded as an effective treatment for schizophrenia. Further investigation is required before the value and dangers of the centrally acting sympathomimetics in psychogenic disorders can be fully assessed. Their indiscriminate use in patients with mental disorders should be avoided (also *see* Chapter 12).

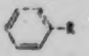
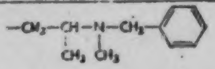
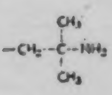
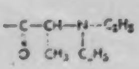
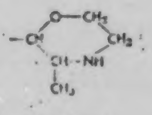
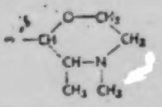
The amphetamines are sometimes used in conditions in which there is a physiological as well as a psychic component. Nocturnal enuresis is sometimes successfully treated with these drugs, and dextroamphetamine may be helpful in relieving premenstrual tension, nausea and vomiting of pregnancy, and menopausal symptoms.

Epilepsy. In *grant mal*, dextroamphetamine is a valuable adjunct to phenobarbital, counteracting the ataxia and drowsiness produced by the barbiturate and thus allowing effective amounts to be given. It is also useful in *petit mal* to counteract the sedative effect of trimethadione if this is troublesome. In some cases of petit mal, dextroamphetamine, either alone or in conjunction with an oxazolidinedione or succinimide, may prevent the attacks and restore the EEG to normal.

Alcoholism. The amphetamines often benefit patients with hangover or depression after drinking. They may also shorten the period of recovery in acute alcoholic stupor. Their value in chronic alcoholism is not established, but they may be of use as an adjuvant to psychotherapy.

TABLE. 24–5. Chemical structures and dosages of some drugs

NOTE.—Not included in this table are dextroamphetamine, methamphetamine, chlorphentermine, and fenfluramine, the structure of which appear in Table 24–1.

NONPROPRIETARY NAME	TRADE NAME	 R	USUAL SINGLE DOSE (mg)	TABLET OR CAPSULE CONTENTS (mg)
Benzphetamine	DIDREX		50	25, 50
Phentermine	IONAMIN WILPO		15-30	8
Diethylpropion	TENUATE TEPANIL		25	25
Phenmetrazine	PRELUDIN		25	25
Phendimetrazine	DIETROL PLEGINE		35	

Fatigue. The effects and limitations of amphetamines in preventing and alleviating fatigue and sleepiness have already been discussed. The drugs should be used for such purposes only sparingly and with medical, advice.

Miscellaneous Uses. Ephedrine and amphetamine have been reported to prevent *syncopal reactions* of the vagal or vasodepressor type due to abnormal sensitivity of the carotid sinuses. Ephedrine, amphetamine, and other sympathometics have been used with variable success to treat *urinary incontinence* and *nocturnal enuresis*. The benefit may be due partly to central effects of the drugs and partly to contraction of the vesical sphincter. Ephedrine and amhetamine, although quite unreliable as uterine relaxants and often excitatory, have been reported to relieve the pain of *dysmenorrhea*. Both these drugs have an inconstant and unreliable relaxant action on the alimentary canal; they have been used in spastic colitis and to assist X-ray diagnosis, but are of little value in these situations. In severe *hypoglycemia* due to hyperinsulinism or overdosage with insulin, epinephrine may, as an emergency measure, raise blood sugar pending administration of glucose; little reliance should be placed on this procedure since the drug is effective only if the liver contains adequate glycogen; a subcutaneous dose of 0.5 mg, if ineffective, should not be repeated.

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APPENDIX 11

The following two papers report studies done at the request of the Committee on Amphetamine Drugs and Athletes of the Board of Trustees of the American Medical Association. These studies represent a part of the Committee's efforts to help determine the effects of such drugs on athletic performance and the extent, if any, of their use in sports. Other findings and the recommendations of the Committee have been submitted to the Board of Trustees and will subsequently be reported to the profession and to the public.

AMPHETAMINE SULFATE AND ATHLETIC PERFORMANCE

I. OBJECTIVE EFFECTS

(By Gene M. Smith, Ph.D. and Henry K. Beecher, M.D., Boston)

(J.A.M.A., Vol. 170, No. 5, May 30, 1959)

The study presented here was designed to answer the question of whether or not amphetamine sulfate ("pep pills") improves athletic performance in trained athletes.

(By Gene M. Smith, Ph.D. and (J.A.M.A., Vol. 170, No. 5, May 30, 1959)
Henry K. Beecher, M.D., Boston)

Controlling Factors in Planning.—We knew at the outset that many variables might influence the effect of amphetamine on athletic performance: dose level; time after medication at which event was performed; whether the subject was rested, slightly fatigued, or severely fatigued; type of athletic event performed (brief intense effort versus prolonged, less intense effort, or event where performance is largely dependent on form versus event where performance is largely dependent on strength); whether the subject performed the event competing wth with the clock or competing with another athlete; whether the athlete knew he was receiving a drug (and his expectations concerning its effect); whether or not the subject was in top form; mood; and motivation.

An initial exploratory phase of the investigation yielded data which did not demonstrate conclusively that amphetamine either did or did not help athletic performance, on the average. However, both the measured performance data and the subjective data obtained by interviewing the athletes indicated that at least some athletes could obtain consistent and repeatable improvements in performance by taking amphetamine sulfate in the dose of 14 mg. per 70 kg. of body weight two to three hours before a race.

This suggestion of an improved performance encouraged us to undertake the second, and much more extensive, phase of the investigation. The present report will deal primarily with the second phase. Six separate experiments comprised this phase of the investigation. Almost 800 measured performances of swimmers, runners, and weight throwers were obtained. Since each experiment was different from the others in important characteristics, each will be described separately and the results reported separately.

Subjects.—In the first and last experiments swimmers were used as subjects. In the second, third, and fourth runners were used. In the fifth weight throwers and shot putters were used. Except for the subjects in experiment four, all were members of the varsity or freshman teams of large Eastern colleges and universities. All college athletes were tested either during or immediately after their athletic season and so were in competitive physical condition. No experimental trials were run on days when the athletes were competing with athletes from other colleges.

Medicaments.—All subjects in all six experiments received, orally, both a placebo and 14 mg. of amphetamine per 70 kg. of body weight, administered on the double-blind basis. The other necessary controls [1] were also used. As will be shown below, the subjects in five of the experiments received one or more other medicaments (50 and 100 mg. of secobarbital and 7 and 21 mg. of amphetamine) in addition to a placebo and 14 mg. of amphetamine per 70 kg. of body weight. On the first day of the first experiment the medicaments were given in elixir form. Some of the subjects objected to the taste of the elixir. Therefore on the remaining 11 days of that experiment and in all subsequent experiments the medicaments were taken in capsule form. The weight of each capsule was accurate to 0.5 mg. In all experiments except the third, the subjects were given an envelope containing the medicament a day or two before each experimental session. The time at which each capsule was to be taken was written on the envelope containing the capsule. On arriving for the experimental session the subject was asked to inform the experimenter if he had taken the medicament as much as five minutes early or late. In all studies the subjects began their experimental session from two to three hours after taking amphetamine. The time interval was shorter

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See footnotes at end of article.

(15, 55, and 60 minutes) for those who took secobarbital. These and other details concerning each of the six experiments are presented below. In describing the various experiments an explanation will be given as to why the experiments were carried out as they were.

Each day before taking the medicament the subject completed a questionnaire giving information about the following items: last night's rest, today's energy level, physical impairments, and degree of eargerness for today's workout. Each day the subject completed an 81-item adjective check list describing his mood and physical condition. The check list was completed once before taking medicament and twice afterward. In addition, after his performance, each subject completed a questionnaire designed to help him evaluate his performance. The results obtained with the questionnaires and check lists will be presented in two subsequent papers.

METHOD

Experiment 1.—Fifteen collegiate swimmers served as subjects in the first experiment. Each man swam his event twice on each of 12 consecutive experimental days. The second swim began 15 minutes after the beginning of the first and therefore was performed under conditions of fatigue. Three men swam the 100-yd. butterfly, three the 100-yd. free style, three the 200-yd. free style, three the 200-yd. breast stroke, and three the 200-yd. back stroke.

On 4 of the 12 days a subject received 14 mg. of amphetamine per 70 kg. of body weight. On four he received placebo, and on four he received 100 mg. of secobarbital per 70 kg. of body weight. The exploratory phase of our investigation had indicated that a few subjects were able consistently to distinguish the effect of 7 mg. of amphetamine per 70 kg. of body weight from those of a placebo. Since the subjects knew the investigation was one dealing with "pep pills," the possibility existed that a "suggestion effect" was produced whenever the subject noticed any unusual feelings or sensations. In other words, it was possible for the performance to be better on "amphetamine days" than on "placebo days" not because the "pep pills" invigorated the athlete or heightened his motivation but simply because he noticed unusual feelings and sensations and assumed this meant he had been given the "pep pill," expected help from it, and so performed better than usual. The reason for using secobarabital with amphetamine and placebo in five of the six experiments of the second phase of the investigation was to prevent the subject from correctly assuming he had received amphetamine whenever he noticed any unusual feelings or sensations. It was also used in an attempt to clarify the question of whether an amphetamine improvement, when it occurs, is due largely to changes in attitude and psychic state. The added advantage of the two drugs chosen is that earlier work[3] had indicated that both have euphoric power while one is a so-called stimulant and the other a depressant. (The subjects were told only that "pep pills" and placebos were being used.)

The design of this experiment required that each subject receive amphetamine on four days, placebo on four, and secobarbital on four. An attempt was made to control for order-effects which could be produced by progressive changes in level of performance, progressive changes in attitude toward the experiment, and other factors. To control for such effects, the drug sequence was set up so that any given subject would receive one dose of amphetamine, one of placebo, and one of secobarbital during each of the four quarters of his 12 trials. There are six possible ways of ordering three drugs: 123, 132, 231, 213, 312, 321. Each subject was assigned four such sequences, each involving three drugs, giving a total of 12 medicaments. The experimenter collecting the data did not know which drug any particular subject had on any given day. This same general procedure was followed to control for order-effects in the remaining studies.

The 12 experimental days were grouped into 6 competitive days (where the three men in a group raced against each other) and 6 individual days (where each man swam alone, racing against the clock). There were two competitive days and two individual days for each of the three types of medication—ampheta-

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See footnotes at end of article.

mine, secobarbital, and placebo. On one of the individual amphetamine days and on one of the competitive amphetamine days the subject took amphetamine two hours before the beginning of the first swim. On the two remaining amphetamine days he took the medicament three hours before beginning the first swim.

Preliminary studies led us to believe the peak subjective and behavioral effects of 14 mg. of amphetamine occurred between two and three hours after medication, whereas that for 100 mg. of secobarbital was approximately one hour. Consequently the exeriment was designed so that the interval between the taking of the active medicament and the beginning of the first swim would be two hours for half of the amphetamine sessions, three hours for the other half, and 55 minutes for all the secobarbital sessions.

On all days a subject took two capsules. The first was taken at either two hours or three hours before the first swim. (Twice under each of the three drugs it was two hours; twice under each it was three.) The second capsule was taken 55 minutes before the first swim on all 12 occasions. On amphetamine days the first capsule contained the amphetamine and the second was a placebo. On placebo days both were placebos. On secobarbital days the first capsule was a placebo and the second contained secobarbital. On placebo days and on secobarbital days the first capsule (which was always a placebo) was taken two hours before the first swim on half of the occasions and three hours before it on the other half.

Each experimental day was organized around six events which were strictly timed. 1. At a specified time (either two or three hours before the first swim) the subject took his first capsule. 2. Fifty-five minutes before the first swim he took his second capsule. 3. Twenty-five minutes before his first swim the subject reported to one of the experimenters and told him if he had failed to take either of the two capsules within five minutes of the time specified. (In no instance did the interval between reported medication time and beginning of first swim deviate from the scheduled interval by more than 15 minutes. The decision was made, without knowledge of drug orderer, not to discard the data which were slightly—5 to 15 minutes—off schedule.) 4. Fifteen minutes later the subject began his warm-up swim, which was timed by a second experimenter to last three to five minutes. 5. The swimmer rested approximately five minutes after warming up and began his first swim exactly 10 minutes after the beginning of the warm-up. 6. Fifteen minutes (plus or minus one minute) after the beginning of his first swim the subject began his second swim.

Each swimmer was timed by two or more clocks. Always one was an ordinary stop watch and one was a 0.01-second electric clock which started automatically at the sound of the gun. (The electric timing device is an invention of Mr. David Collander of Massachusetts Institute of Technology.) One or more additional stop watches were used on approximately half of the races.

Because the electric timing device eliminated the reaction time of starting the stop watch, the electric times were longer (an average of 0.18 second) than the manual times. In coordinating the manual and electric data this difference was taken into account. All time information for each race was examined (without knowledge of which medicament had been given) and the median was accepted as accurate. This same procedure was used in experiment 6. In experiments 2, 3, and 4 only one clock (a manual stop watch) was used for each runner.

The subjects were scheduled in staggered fashion, the first reporting at 4 p.m. and the last reporting at 5:30 p.m. There were a few deviations from this plan due to scheduling problems. However no subject ever reported earlier than 3 or later than 6 p.m.

The cooperation on the part of the subjects in this experiment was exceptionally good. They usually reported for the experiment about five minutes before they were scheduled to arrive. In the total 180 sessions no more than five began late, and in these instances the lateness was usually between 5 and 15 minutes.

Experiment 2.—Nine collegiate track-men served as subjects in experiment 2. Three ran 600 yd., three ran 1,000 yd., and three ran one mile. Each man ran these distances only once each experimental day. The sessions were separated by at least one day. Experimental sessions were never carried out either on the day of a meet with another school or on the day preceding such a meet. The runs occurred on an indoor track with a cinder surface. The men ran in competitive groups of three, except on two occasions when scheduling problems reduced the size of a group to two. All races occurred between 4:30 and 5:15 p.m.

The experimental design called for nine runs from each subject, three sessions in which the subject would be medicated with 14 mg. of amphetamine per 70 kg. of body weight, and three with 50 mg. of secobarbital per 70 kg., and three with placebo. Due to illness one subject completed only three runs and so contributed only one run under each of the three medication conditions. Following the procedure outlined in experiment 1, the secobarbital was taken one hour before running and the amphetamine was taken two hours before running.

In this experiment and in the subsequent ones the barbiturate dosage was only half that used in experiment 1. As mentioned above, the barbiturate was used to prevent the subject from correctly assuming he had received amphetamine whenever he thought he perceived drug-effects. The 100-mg. dosage, used in experiment 1, was so potent that subjects occasionally said such things as the following to the experimenter: "I feel sort of dopey. I think I got a sleeping pill today." To reduce the obviousness of its effects, the secobarbital dosage was changed to 50 mg. per 70 kg. in the present experiment and in the three subsequent ones where secobarbital was used.

Analysis of the data of experiment 2 was complicated by the fact that on the day of session 8 the track was filled with holes. Session 8 occurred after the track season was over and the baseball players had begun practicing in the indoor track "cage." Due to an oversight the track had not been rolled before the beginning of this session, and baseball practice had left it in bad condition. The amount of impairment produced by the poor track conditions was assessed by obtaining for each subject the difference between his time on session 8 and his mean time on the other two sessions when he ran under the same type of medication as that given him on session 8. In all instances the time for session 8 was greater. The average difference for the group was 12.6 seconds. The average percent difference was 6.7. The "t" value for the mean difference of 6.7 was 3.41, which is beyond the 0.02 level of significance. The results of experiment 2 are reported both including and excluding the data obtained on session 8.

Experiment 3.—In experiment 3 eight collegiate track men ran once on each of six experimental days. They ran in competitive groups of two or three on an outdoor wooden track. Three men ran a mile. Three ran 600 yd. Two ran 440 yd. The subjects were given 14 mg. of amphetamine per 70 kg. on two occasions, with 50 mg. of secobarbital per 70 kg. on two and with placebo on two. Each day the subject took two capsules. The first capsule was taken two hours and the second one hour before running. On amphetamine days the first capsule contained amphetamine and the second was a placebo. On the secobarbital days the second capsule contained the active agent. Both capsules were inactive on the placebo days. All runs took place between 2 and 4:30 p.m.

The original design of this experiment called for 12 runs from each subject. However only six were completed by the time the wooden track was removed for spring baseball practice. Our aim had been to have an interval of at least one day between experimental sessions. However in about one-third of the cases this was not possible because of scheduling problems. The cooperation of these subjects was poorer than that of the other groups studied. Their races were frequently 10 to 20 minutes off schedule. There were numerous cancellations and changes of schedule. Interpretation of the results was further complicated by the fact that the subjects ran on an outdoor track during winter. The temperature and wind velocity varied considerably and influenced running times.

Experiment 4.—The nine subjects participating in experiment 4 were marathon runners preparing for the Boston Athletic Association Marathon and other long-distance races. They were tested during the two months preceding the marathon, which occurred on April 20.

These subjects were different from those in the other five experiments primarily by virtue of age. The age range was 22 to 41 years, with a median of 33 years. Four of these men had attended college. All of them were experienced runners. Most had been running for several years. Seven had won Amateur Athletic Union-sponsored long-distance races on one or more occasions. The other two had been among the first five to finish in one or more such races.

The original design called for 12 runs from each man, three times after the placebo had been given, three times with 50 mg. of secobarbital per 70 kg., twice with 7 mg. of amphetamine per 70 kg., and twice with 14 mg. and twice with 21 mg. amphetamine per 70 kg. Because of weather difficulties and injuries only three of the runners completed all 12 runs. Two completed 8, one 10, one 9, one 6, and one 5 runs.

Any given subject in this experiment ran the same distance and the same course each day. However, the various subjects ran different courses. The shortest course was approximately 4.5 miles and the longest approximately 12.7 miles. Each subject timed himself.

Each day a subject took two capsules. He took the first capsule two hours and the second 15 minutes before beginning the race. As in the preceding experiments amphetamine medicaments were put in the first capsule, secobarbital in the second, and placebos in both. The various subjects ran for different lengths of time, depending on the length of their course and their running speed. The shortest running time occurred on a 4.7-mile course (24 minutes and 10.5 seconds) and the longest running time occurred on the 12.7-mile course (92 minutes and 20 seconds). The time interval between taking the second capsule and starting the race was shorter (15 minutes) in this experiment than in the others. This was done primarily for reasons of safety. (Several of the subjects drove automobiles to the starting point of their courses. We did not want subjects who were unprepared for the possible effects of mental clouding and sedation to begin experiencing these effects while driving to their courses.)

Before beginning the experiment a subject was told the reason for the study and was told that extraneous factors such as weather conditions and his physical condition could influence the results of his time-trials. He was asked to control as well as possible all such factors and, in particular, not to take the medicament when the weather was bad. The subject filled in a questionnaire after each race, indicating all factors which might have influenced his running time that day.

In all experiments we pointed out to the subject that his role was that of experimenter as well as subject. An attempt was made to inspire all subjects to be meticulously careful and honest in carrying out their responsibilities. An especially strong effort was made in this respect in the present experiment because all measured performances of the marathon runners were carried out in the absence of the experimenter. The subject was given 12 packages, each containing the medicament and performance-analysis materials for one trial. He was asked to run the same course every session, not to run when the weather was bad, and not to run when his physical condition was impaired to an extene which might affect his running time. In the entire 82 runs of this experiment only 3 were discarded because of violation of these controls. One session was discarded because subject 4 altered his course on that day. (Snow began to fall after subject had begun his run. In an attempt to compensate for this, he shortened his course.) On another occasion subject 5 (whose 6.8-mile course was an approximately straight line between his home and his place of work) discovered on beginning his race that he had to face a 30-mile per hour headwind the entire distance. On this occasion his time was 49.30 (49 minutes and 30 seconds). In his remaining 11 trials there was a 2.75-minute range (from 40:30 to 43:15). The wind caused his time to fall 6.25 minutes outside that range. On the third discarded occasion a still different runner (subject 7) ran an experimental session the day after he had competed in a 30-km. (18.64-mile) Amateur Athletic Union race. He began the race reporting sore feet as a physical impairment. He ran his 4.7-mile course that day in 33 minutes and 52 seconds. As in the case of the man running against the headwind, the time just reported was grossly out of line with the remaining ones. On this man's remaining eight trials his best time was 24:10.5 and his worst was 27:15 (a range of 3 minutes and 4.5 seconds). His "sore feet" time of 33:52 was over six minutes outside the range of his other eight races.

TABLE 1.—COMPARATIVE EFFECTS, IN EXPERIMENT 1, OF AMPHETAMINE SULFATE, SECOBARBITAL, AND PLACEBO ON PERFORMANCE TIMES OF 15 SUBJECTS SWIMMING UNDER RESTED AND FATIGUED CONDITIONS[1]

Swimming style and subject number	1st swim, rested condition[2]							2d swim, fatigued condition[2]						
	Time, seconds							Time, seconds						
	$\overline{P}$	$\overline{A}$	$\overline{S}$	$\overline{P}-\overline{A}$	$\frac{\overline{P}-\overline{A}}{\overline{P}}$, %	$\overline{P}-\overline{S}$	$\frac{\overline{P}-\overline{S}}{\overline{P}}$, %	$\overline{P}$	$\overline{A}$	$\overline{S}$	$\overline{P}-\overline{A}$	$\frac{\overline{P}-\overline{A}}{\overline{P}}$, %	$\overline{P}-\overline{S}$	$\frac{\overline{P}-\overline{S}}{\overline{P}}$, %
Free style, 100 yd:														
1	57.46	56.92	57.94	+0.54	+0.94	−0.48	−0.84	58.77	58.66	60.07	+0.11	+0.19	−1.30	−2.21
2	58.56	57.89	60.07	+.67	+1.14	−1.51	−2.58	60.01	58.97	60.90	+1.04	+1.73	−.89	−1.48
3	56.38	55.81	56.91	−.57	+1.01	−.53	−.94	59.14	57.95	58.10	+1.19	+2.01	+1.04	+1.76
Butterfly, 100 yd:														
4	65.49	64.44	69.50	+1.05	+1.60	−4.01	−6.12	66.53	65.01	70.56	+1.52	+2.28	−4.09	−6.06
5	69.87	69.82	71.35	+.05	+.07	−1.48	−2.12	72.33	71.24	74.34	+1.09	+1.51	−2.01	−2.78
6	77.52	73.82	76.18	+3.70	+4.77	+1.34	+1.73	89.32	88.16	91.61	+1.16	+1.30	−2.29	−2.56
Free style, 200 yd:														
7	136.77	136.74	143.13	+.03	+.02	−6.36	−4.65	143.84	145.86	148.83	−2.02	−1.40	−4.99	−3.47
8	139.62	138.76	144.81	+.86	+.62	−5.19	−3.72	146.22	143.51	147.28	+2.71	+1.85	−1.06	−.72
9	134.25	132.31	136.47	+1.94	+1.45	−2.22	−1.65	142.67	137.76	144.59	+4.91	+3.44	−1.92	−1.35
Back stroke, 200 yd:														
10	148.52	145.59	152.73	+2.93	+1.97	−4.21	−2.83	152.78	150.89	153.60	+1.89	+1.24	−.82	−.54
11	164.24	162.52	166.48	+1.72	+1.05	−2.24	−1.36	169.61	170.59	171.68	−.98	−.58	−2.07	−1.22
12	166.65	166.85	169.06	−.20	−.12	−2.41	−1.45	177.05	180.08	176.11	−3.03	−1.71	+.94	+.53
Breast stroke, 200 yd:														
13	160.84	159.39	161.62	+1.45	+.90	−.78	−.48	162.05	165.52	164.15	−3.47	+2.14	−2.10	−1.30
14	176.95	174.10	177.07	+2.85	+1.61	−.12	−.07	179.87	179.38	180.45	+.49	+.27	−.58	−.32
15	177.82	177.16	180.28	+.66	+.37	−2.46	+1.38	183.51	185.72	184.60	−2.21	−1.20	−1.09	−.59

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[1] Dosages were 14 mg of amphetamine sulfate per 70 kg of body weight and 100 mg of secobarbital per 70 kg of body weight.

[2] $\overline{P}$ = mean placebo time for each subject. $\overline{A}$ = mean amphetamine time for each subject. $\overline{S}$ = mean secobarbital time for each subject. $\overline{P}-\overline{A}$ indicates change in perforamcne under amphetamine: + indicates improvement: − indicates impairment. The percent change scores listed under $\frac{\overline{P}-\overline{A}}{\overline{P}}$,% were obtained with the formula $\left(\frac{\overline{P}-\overline{A}}{\overline{P}}\right)$ (100).

Experiment 5.—Thirteen collegiate weight-throwers and shot-putters served as subjects in experiment 5. Nine threw the 35-lb. weight. Four put the 16-lb. shot. All were members of varsity or freshmen teams. (Although shot-putters are sometimes called weight-throwers, the present report will distinguish between the two groups by calling the nine who threw the 35-lb. weight weight-throwers and calling the four who put the 15-lb. shot shotputters.) All experimental sessions were carried out in a heated indoor track cage.

Both weight-throwers and shot-putters threw 15 to 25 times each day. (The subjects were told that their first three throws would be considered warm-up throws and would not be counted. In analyzing the data the decision was made to eliminate the first five rather than the first three because the fourth and fifth throws were in general below the mean of the remaining throws. This decision was made without knowledge of the drug administered to a given subject on a given day.) Chalk lines were drawn every 5 ft. within the throwing range. An experimenter was stationed about 30 ft. from the point at which the weight was expected to fall. When it landed, the experimenter estimated its distance by relating the indentation made in the ground at the point of contact to the system of chalk lines. (Time limitations prevented tape measurement.) After each throw the subject walked to the point where his throw had landed and then gave his own distance-estimate to the experimenter. In general the discrepancies between estimates made by the experimenter and those made by subjects were less than one foot. The average for all subjects for all sessions was 0.41 ft.

The design called for 12 sessions, four with 14 mg. of amphetamine per 70 kg. of body weight, four with 50 mg. secobarbital per 70 kg., and four with placebo. Only 7 of the 13 men completed all 12 sessions. Two were there for 10, one for 6, one for 5, and two for 4 sessions. The two subjects contributing only four sessions (subjects 7 and 8) (tables 8 and 9) were 35-lb. weight-throwers who were somewhat uninterested in the experiment. In general their cooperation was poor. Five of their eight sessions were ones on which they either reported late or failed to take their medicament on time. The subject contributing five sessions (subject 9) was a freshman who changed his style after the third session, adding another body turn. The data contributed by the three men just mentioned are suspect as well as sparse. Consequently the weight-throwing analyses have been done both including and excluding these three subjects. As in the earlier experiments the subjects took two capsules each day, one or both of which contained placebos. Amphetamine was taken two hours and secobarbital one hour before the session began.

Although no subject contributed more than 12 sessions the study lasted a total of 15 days because of missed sessions and make-ups. The experimental sessions began at 4:30 p.m. on each of the first nine days of the study. Because of unavailability of space they began at 7:30 p.m. on the final six days. During the latter sessions the subjects were instructed to take their first capsule at 5:45 p.m., eat dinner at 6:15, take their second capsule at 6:45, and report for the experiment at 7:30. (The effect of amphetamine on performance was found to be somewhat similar in the afternoon (mean improvement=4.84%) and in the evening (mean improvement=6.29%.)

Experiment 6.—Sixteen swimmers served in this experiment. Thirteen of them had previously been subjects in experiment 1. Three were new. There were several ways in which this experiment differed from the first one. There were 6 sessions rather than 12. On three days a subject received 14 mg. of amphetamine; on three he received a placebo. No secobarbital was used. The drug order was random with the two restrictions that (1) no subject would receive the same medicament three times consecutively and (2) no subject would receive the same medicament on either the first and second or the fifth and sixth sessions. All capsules were taken two hours before the race. With a few exceptions an interval of one day intervened between adjacent experimental sessions. Experiment 1, on the other hand, had been run on consecutive days. Experiment 6 was begun two days after the final competitive meet of the year. Experiment 1 had been carried out in the early part of the season. In the present experiment each subject swam only once each day rather than twice. This was done to encourage the subjects to give an "all out" effort. They did not have to save themselves for a second race.

The major difference between experiments 1 and 6 was that in the sixth we tried to guarantee maximum effort from each subject on all swims. (We had asked for maximum effort in all experiments. However, in experiments 1, 2, and 3 we compared the experimental times with those achieved in meets with other schools and found the experimental times to be slower for most subjects than the meet times. Interestingly, this was not the case with the weight-throwers and shot-putters of experiment 5. The longest experimental throws were, in general, as far as the longest meet throws.) To achieve an experimental situation which would stimulate maximum effort and approximate the psychological atmosphere of a competition with another college the following steps were taken. First, the subjects were called together for a meeting before the experiment began. At this meeting it was explained that the sole purpose of the experiment was to test the pep pils under conditions which stimulated the school competition situation. We explained that our investigation could not be considered complete until we knew whether the pep pills were effective under conditions of maximum motivation and 100% effort. (No information was given concerning the results of the previous experiments.)

Second, the race times each swimmer had achieved in the final three to five competition swims of the season were collected from the coach and the median of these times was computed for each subject. At the preexperimental meeting each subject was given his median competition time and was told that this was the goal he was to attempt to match in the experimental swims. The subjects were told that each man whose median experimental time equaled or beat his median competition time would be treated to a steak dinner, where he could order anything he wanted up to $7.50. Furthermore, they were told the whole group would win the dinner if as many as half of the men won.

Third, the swimmers were asked to cheer on their teammates just as they customarily did during competition with other schools. Throughout the experiment the swimmers did this. Indeed, several observers remarked that on some experimental sessions the enthusiasm and excitement were greater than that seen at meets with other schools.

Several of the swimmers made their "steak" times on both the first and second experimental days. This raised the possibility that certain of the subjects might win their steaks on the first four swims and then relax on the last two. To avoid this a new element was added to the experiment at the beginning of the third day. The subjects were told that any swimmer who made his "steak" time on five out of six occasions would be treated to an extra steak dinner on some evening subsequent to the first.

TABLE 2.—STATISTICAL EVALUATIONS, FOR EXPERIMENT 1, OF THE COMPARATIVE EFFECTS OF AMPHETAMINE AND PLACEBO ON SWIMMING TIMES OF 15 SWIMMERS UNDER RESTED AND FATIGUED CONDITIONS

Number of swimmers	Distance of swim yd.	1st swim, rested condition [1]						2d swim, fatigued condition [1]					
		Average magnitude of effect			Average percent of effect			Average magnitude of effect			Average percent of effect		
		$\overline{P}-\overline{A}$	"t"	p	$\frac{\overline{P}-\overline{A}}{\overline{P}}$, %	"t"	p	$\overline{P}-\overline{A}$	"t"	p	$\frac{\overline{P}-\overline{A}}{\overline{P}}$, %	"t"	p
6	100	+1.02	5.24	0.01	+1.50	5.03	0.01	+1.10	2.04	0.10	+1.59	2.38	0.10
9	200	−.19	.20	NS	−.03	.04	NS	+1.36	3.63	.01	+.87	3.65	.01
15	(2)	+.29	.50	NS	+.59	1.36	.20	+1.26	4.17	.001	+1.16	3.82	.01

[1] $\overline{P}-\overline{A}$ = mean difference for the group of $\overline{P}-\overline{A}$ scores presented in table 1.

$\frac{\overline{P}-\overline{A}}{\overline{P}}$, % = mean difference for the group of $\frac{\overline{P}-\overline{A}}{\overline{P}}$, % scores presented in table 1.

t = "t" test value for correlated means, p = two-tailed probability value. NS = not significant at or beyond the 0.20 level using a two-tailed test.

[2] Combined groups.

TABLE 3.—STATISTICAL EVALUATIONS OF THE COMPARATIVE EFFECTS IN EXPERIMENT 1, OF PLACEBO AND AMPHETAMINE SULFATE ON SWIMMING TIMES OF MEN SWIMMING INDIVIDUALLY AND IN COMPETITION WITH EACH OTHER UNDER RESTED AND FATIGUED CONDITIONS.[1]

Distance of swim yard	Number of subjects	Swimming individually									Swimming in competition								
		2 h after medication			3 h after medication			2 and 3 h combined			2 h after medication			3 h after medication			2 and 3 h combined		
		Md	"t"	p	Md	"t"	p	Md	"t"	p	Md	"t"	p	Md	"t"	p	Md	"t"	p
1st Swim, effect, average magnitude:																			
100	6	+0.76	1.51	0.20	+1.71	2.63	0.05	+1.24	2.19	0.10	+0.81	1.53	0.20	−1.10	1.62	0.20	+9.96	1.65	0.20
200	9	+2.41	3.28	.02	+1.49	1.78	.20	+1.95	2.63	.05	+.88	1.26	NS	+.65	.68	NS	+.77	1.21	NS
100 and 200	15	+1.75	3.38	.01	+1.57	2.87	.02	+1.67	3.38	.01	+.86	1.87	.10	+.83	1.35	.20	+.84	1.96	.10
1st Swim, effect, average percent:																			
100	6	+1.06	1.48	.20	+2.55	3.12	.05	+1.81	2.46	.10	+1.20	1.69	.20	+1.53	1.73	0.20	+1.37	1.84	.20
200	9	+1.48	3.50	.01	+.89	1.66	.20	+1.19	2.63	.05	+.64	1.39	NS	+.43	.65	NS	+.54	1.25	NS
100 and 200	15	+1.32	3.54	.01	+1.56	3.18	.01	+1.44	3.66	.01	+.86	2.23	.05	+.87	1.63	.20	+.87	2.20	.05
2nd swim, effect, average magnitude:																			
100	6	+1.23	2.45	.10	+1.52	6.85	.001	+1.38	4.53	.01	−.02	.06	NS	+1.34	2.99	.05	+.66	4.01	.02
200	9	+1.01	.61	NS	+2.57	2.01	.10	+1.79	1.27	NS	−1.11	1.59	.20	−3.22	3.16	.20	−2.17	3.23	.02
100 and 200	15	+1.10	1.10	NS	+2.15	2.81	.02	+1.62	1.94	.10	−.68	1.45	.20	−1.40	1.62	.20	−1.04	1.91	.10
2d swim, effect, average percent:																			
100	6	+1.74	2.43	.10	+2.27	6.24	.01	+2.01	4.59	.01	+.12	.22	NS	+1.88	2.97	.05	+1.01	3.71	.02
200	9	+0.75	.69	NS	+1.72	2.01	.10	+1.20	1.27	NS	−.66	1.41	.20	−1.96	3.07	.02	−1.31	3.16	.02
100 and 200	15	+1.14	1.62	.20	+1.94	3.69	.01	+1.52	2.60	.05	−.35	.98	NS	−.42	.63	NS	−.30	.96	NS

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[1] The 72 Md values (mean difference values) give a more detailed breakdown of information presented in table 2. Average magnitude and average percent differences between amphetamine time and placebo time for the 3 groups (100-yd. 200-yd. and combine) are presented separately for individual and competition conditions. Within each of those conditions there is a further breakdown for the 2-h and 3-h intervals. For the most detailed breakdown, each Md score is based on only 1 amphetamine and 1 placebo time for each subject.

In general, the attempt to obtain maximum performance was successful. Nine of the 16 swimmers broke their "steak" times on at least three out of six occasions. Two broke their lifetime records. Five more came within 0.3 second of their lifetime records. Forty-seven of the 93 swims reached the "steak" time criterion. One might wonder why the "steak" time incentive was so effective with these subjects. This incentive was chosen because we discovered in talking with the subjects after the first experiment that winning a steak dinner appeared to have symbolic significance for the boys. On various past occasions certain ones of them had been given steak dinner incentives by their coaches. In these instances the steak dinner had meant much more than its monetary equivalent. Our experimental "steak" time arrangement was selected in an effort to tap this previously established symbolic reward system.

Fifteen of the 16 swimmers completed their six scheduled swims. One (subject 13) became ill and was able to complete only three (table 11). Another (subject 14) had a series of misfortunes. He missed four regularly scheduled sessions, which he subsequently made up. Once he caught the "flu." Once he received a third degree burn on his arm. In addition to missing four regular sessions he performed four of his swims under handicapped conditions. Once he swam still feeling weak from the "flu." Twice he swam with a bandage covering the burn on his arm and reported that the water caused pain at the point of the burn. On still another occasion he received an allergy shot before swimming and reported that this had produced swelling, stiffness, and pain in his arm. The range between his best and worst time was 11.2 seconds. This is more than five times as great as the mean range for the remaining 15 subjects. The swimming analyses reported in the next section were performed both including and excluding these two swimmers.

Four of the 16 subjects swam the 200-yd. breast stroke, 3 swam the 200-yd. back stroke, 3 the 200-yd. free style, 3 the 100-yd. butterfly, and 3 the 100-yd. free style. All races occurred between 4:30 and 6:30 p.m. Eleven of the subjects swam in groups of two or three. Five swam alone. All 16 subjects were combined into a single group in the analyses because examination of the comparative swimming times under the effects of amphetamine and placebo indicated that the 5 men who swam alone were not affected differently by amphetamine than were the 11 who swam in groups. Presumably this was because the subjects swam with maximum or near maximum motivation whether swimming alone or in groups. The results of this experient are reported in table 11.

As in experiment 1, the cooperation of subjects in this experiment was remarkable. In the entire 96 occasions, subjects reported more than five minutes late only three times. On two occasions subjects reported taking medicaments late; one subject took one of his medicaments 10 minutes late and another was 15 minutes late in taking one of his.

Data Collected in Phase 1.—Our investigation of the effects of pep pills on athletes was carried out in two phases. The first provided a broad exploratory coverage of the problem. We studied several different dose levels using various time intervals between medication and peformance. One dose level (7 mg. per 70 kg.) was studied in a sufficient number of subjects (20) to warrant inclusion in this report. Those data are presented in the section on results, after presentation of the more substantial and extensive results obtained in phase 2.

The work done in the first phase was exploratory. Different subjects were studied differently. In presenting the results obtained with each subject a tabular summary of the more important methodological details will be given.

TABLE 4.—STATISTICAL EVALUATIONS IN EXPERIMENT 1, OF COMPARATIVE EFFECTS OF PLACEBO AND SECOBARBITAL ON SWIMMING TIMES OF MEN SWIMMING INDIVIDUALLY AND IN COMPETITION WITH EACH OTHER UNDER RESTED AND FATIGUED CONDITIONS 55 MINUTES AFTER MEDICATION.[1]

Distance of swim, yards	Number of subjects	Swimming individually			Swimming in competition			Combined		
		Md	"t"	p	Md	"t"	p	Md	"t"	p
1st swim, effect, average magnitude:										
100	6	−1.41	1.15	NS	−.81	1.82	.20	−1.11	1.55	.20
200	9	−2.87	3.21	.02	−2.90	4.90	.01	−2.89	4.30	.01
Combined	15	−2.28	3.15	.01	−2.07	4.37	.001	−2.18	4.10	.01
1st swim, effect, average percent:										
100	6	−2.30	1.28	NS	−1.32	2.06	.10	−1.81	1.72	.20
200	9	−1.99	3.05	.02	−1.92	4.54	.01	−1.95	3.92	.01
Combined	15	−2.12	2.68	.02	−1.68	4.72	.001	−1.90	3.83	.01
2d swim, average magnitude:										
100	6	−2.20	2.21	.10	−.96	1.32	NS	−1.58	2.30	.10
200	9	−.37	1.11	NS	−2.07	3.71	.01	−1.52	2.84	.05
Combined	15	−1.46	2.22	.05	−1.62	3.61	.01	−1.55	3.80	.01
2d swim, average percent:										
100	6	−3.23	2.15	.10	−1.22	1.17	NS	−2.22	2.17	.10
200	9	−.67	1.18	NS	−1.44	3.85	.01	−1.00	2.73	.05
Combined	15	−1.70	2.79	.05	−1.35	2.98	.01	−1.49	3.16	.01

[1] Symbols are defined in earlier tables. The Md scores are based on the $\bar{P}-\bar{S}$ and $\frac{\bar{P}-\bar{S}}{\bar{P}}$, percent scores presented in table 1.

RESULTS

Experiment 1.—Experiment 1 was the most extensive and intricate of the six experiments described in the preceding section. It provides 360 measured performances by 100-yd. and 200-yd. swimmers. The results obtained with each of the 15 swimmers in the first experiment are presented in table 1. Each subject swam four times under each of three drug conditions: placebo, amphetamine (14 mg. per 70 kg. of body weight), and secobarbital (100 mg. per 70 kg.). Each subject's mean time for the first (rested condition) swim on the four placebo sessions and his corresponding mean time for amphetamine and secobarbital sessions are shown; times for the second (fatigued) swims under influence of placebo, amphetamine, and secobarbital, respectively, are also shown. (The results of the statistical analyses of the data presented in table 1 are shown in tables 2 and 4.)

Table 1 shows the difference between each subject's mean placebo time and his mean amphetamine time for the first swim. Of the 15 subjects, all but one have plus scores, indicating that they swam faster under influence of amphetamine than of placebo. The mean improvement for the 15 subjects taken as a group was 1.26 seconds. As shown in table 2, this improvement is very significant, statistically. When evaluated with the "t" test for correlated means it yields a "t" value of 4.17, which is beyond the 0.001 level of significance using a two-tailed test.

Column 5 of table 1 presents the comparative performance under influence of amphetamine and placebo on the first swim in a different way. Here the difference between a subject's mean placebo score and his mean amphetamine score is expressed as a percentage of his mean placebo score. Table 2 shows that the 15 swimmers taken as a group obtained a mean improvement of 1.16% under amphetamine. This average improvement yields a "t" of 3.82, which is beyond the 0.01 level of significance.

Column 6 of table 1 shows the comparative swimming time under influence of placebo and secobarbital. Fourteen of the 15 subjects were impaired by secobarbital. The group had an average impairment of 2.18 seconds. The corresponding percentage of impairment for the group was 1.9%. The "t" values for these mean differences are shown in table 4.

Column 11 of table 1 presents the comparative effects of amphetamine and placebo on the second swim. The performance of 10 of the 15 subjects was improved by amphetamine. However, the average improvement for the group was only 0.29 second. The corresponding average percentage improvement was 0.59% (table 2).

Column 13 shows that 13 of the 15 subjects were impaired by secobarbital on the second swim. The average impairment for the group was 1.55 seconds "t"=3.80; $p<0.01$). The corresponding impairment was 1.49% ("t"=3.16; $p<0.01$) (table 4).

Table 1 presents the results of the statistical comparisons of placebo versus amphetamine (14 mg. per 70 kg.) for each of three groups: the six 100-yd. men, the nine 200-yd. men, and the 15 swimmers combined. The results shown in table 2 were arrived at using the "t" test for correlated means. The "t" test values and their associated two-tailed probability values are reported both for magnitude of difference (mean placebo minum mean amphetamine) and for percentage of difference (mean placebo minus mean amphetamine/mean placebo). In these comparisons there is no breakdown for the competitive versus individual conditions or for the 2-hour versus 3-hour conditions. (Such a breakdown is given, however, in table 3).

As shown in table 2, amphetamine produced statistically significant improvement for both the 100-yd. swimmers and the 200-yd. swimmers during the first swim (rested condition) but produced significant improvement for only the 100-yd. men on the second swim (fatigued condition).

Table 3 shows the comparative effects of placebo and amphetamine (14 mg./70 kg.) on swimming times when the subjects swam alone (racing against the clock) and when they swam in competition (racing against each other). This table presents a further breakdown (within the individual condition and within the competition condition) of the effects of amphetamine when taken two hours before the first swim and when taken three hours before the first swim. The amphetamine versus placebo comparisons in table 3 give some indication that the amphetamine effects may have been slightly greater at three hours than at two hours after medication, especially on the second swim comparisons. However this tendency is not consistent enough to be more than suggestive. Consequently the description of results in the next two paragraphs will be limited to the comparisons combining the data obtained at the two time points.

TABLE 5.—COMPARATIVE EFFECTS OF AMPHETAMINE SULFATE, SECOBARBITAL, AND PLACEBO ON PERFORMANCE TIMES OF 5 GROUPS OF SUBJECTS SWIMMING UNDER RESTED AND FATIGUED CONDITIONS[1]

	1st swim, rested condition			
	$\bar{P}-\bar{A}$	$\frac{\bar{P}-\bar{A}}{\bar{P}}$, %	$\bar{P}-\bar{S}$	$\frac{\bar{P}-\bar{S}}{\bar{P}}$, %
100-yd free style swimmers (n=3)	+1.60	+2.15	−1.38	−2.17
100-yd butterfly (n=3)	+.59	+1.03	−.84	−1.45
200-yd free style (n=3)	+.94	+.70	−4.59	−3.34
200-yd back stroke (n=3)	+1.65	+.96	−1.12	−.64
200-yd breast stroke (n=3)	+1.49	+.97	−2.96	−1.88
	2d swim, fatigued condition			
100-yd free style (n=3)	+1.25	+1.70	−2.77	−3.80
100-yd butterfly (n=3)	+.78	+1.31	−.37	−.64
200-yd free style (n=3)	+1.86	+1.36	−2.65	−1.85
200-yd back stroke (n=3)	−1.74	−1.02	−1.26	−.74
200-yd breast stroke (n=3)	−.71	−.35	−.65	−.41

[1] Symbols defined in table 2; scores based on those in table 1.

For the first swim (rested condition) amphetamine produced improvement in both 100-yd. and 200-yd. men, both when the men swam individually and when they swam in competition. Swimming individually, the mean improvement scores were 1.24 seconds, 1.95 seconds, and 1.67 seconds for the 100-yd., 200-yd., and combined groups respectively. All three improvements were beyond the 0.10 level of significance. The corresponding improvement scores were 1.81%, 1.19%, and 1.44% (all beyond the 0.10 level of significance). When the subjects swam competitively the amphetamine improvement was not as great as that found when the subjects swam individually. The 100-yd. men obtained an improvement of 0.96 seconds. The 200-yd. men improved 0.77 seconds. The combined group improved 0.84 seconds. The corresponding improvement scores were 1.37%, 0.54%, and 0.87%. (See table 3 for "t" values and significance levels.) Although the 15 subjects obtained a greater mean difference between amphetamine and placebo when swimming individually than when swimming competitively, this difference did not reach the 0.20 level of significance.

On the second swim (fatigued condition) there was an interesting difference between the 100-yd. and 200-yd. swimmers under the competition condition. Whereas the 100-yd. men swam 0.66 seconds faster under the influence of amphetamine than under placebo ("t"=4.01; $p<0.02$) the 200-yd. men swam 2.17 seconds slower under influence of amphetamine ("t"=3.23; $p<0.02$). On the other hand, both groups of swimmers obtained an amphetamine improvement when swimming individually, although the improvement for the 200-yd. men was slight.

Table 4 presents information concerning the comparative effects of secobarbital and placebo, under rested and fatigued conditions, with a breakdown for individual and competitive conditions. On the first swim the 200-yd. men showed about the same impairment when swimming individually (2.87 seconds and 1.99%) as when swimming competitively (2.90 seconds and 1.92%). The 100-yd. men showed more impairment when swimming individually (1.41 seconds and 2.30%) than when swimming competitively (0.81 seconds and 1.32%).

On the second swim the 100-yd. and 200-yd. men showed an interesting difference in secobarbital effect. The 100-yd. men were impaired more than twice as much when swimming individually than when swimming competitively (2.20 seconds as opposed to 0.96 seconds), whereas the 200-yd. men showed just the reverse. They were impaired 0.97 seconds when swimming individually and 2.07 seconds when swimming competitively. Both with respect to magnitude and percent effect, table 4 shows that on the second swim 100-yd. men were impaired to a statistically significant extent when swimming individually (but not when swmiming competitively) while the 200-yd. men were impaired significantly when swimming competitively but not when swimming individually.

The 15 swimmers comprised five groups of three men each: 100-yd. free style, 100-yd. butterfly, 20-yd. free style, 200-yd. back stroke, and 200-yd. breast stroke. Table 5 shows that all five groups swam faster under influence of amphetamine than under pacebo on the first swim. On the second swim the two groups of 100-yd. men and the 200-yd. free style group swam faster under influence of amphetamine than pacebo but the 200-yd. breast stroke and 200-yd. back stroke groups swam slower under influence of amphetamine than placebo. On both first and second swims all five groups showed impairment under secobarbital (table 5).

Experiment 2.—Table 6 presents the results obtained with the nine runners who performed on an indoor track. The mean performance times under the influence of placebo, amphetamine (14 mg. per 70 kg.), and secobarbital (50 mg. per 70 kg.) are shown in columns 1, 2, and 3 respectively. Column 4 shows the difference between each subject's mean placebo time and his mean amphetamine time. Column 5 expresses that difference as a percent of the mean placebo time. Columns 6 and 7 show the corresponding magnitude and per cent comparisons for placebo versus secobarbital. The results of the statistical evaluations of these scores appear at the bottom of the table.

Column 4 shows that eight of the nine runners performed faster under influence amphetamine than under placebo. The mean difference for the amphetamine-placebo scores is 4.24 seconds. The mean difference is 2.21%. These two mean differences yield "t" values of 1.30 and 1.91 respectively. Subject 9 increased the variability of the group greatly. Consequently the "t" values are low in spite of the fact that eight of the nine subjects improved during use of amphetamine.

As mentioned before, session 8 was carried out under atypical conditions. The statistical analyses were performed both including and excluding that session. The right half of table 6 presents the results obtained excluding session 8. The average improvement under amphetamine was 6.37 seconds ("t"=2.23; $p<0.10$). The corresponding improvement was 3.17% ("t"=2.46; $p<0.05$).

TABLE 6.—COMPARATIVE EFFECTS IN EXPERIMENT 2, OF AMPHETAMINE SULFATE, SECOBARBITAL, AND PLACEBO ON PERFORMANCE TIMES OF NINE RUNNERS[1]

Distance run	Subject No.	All sessions							Session 8 excluded						
		Time in seconds							Time in seconds						
		$\bar{P}$	$\bar{A}$	$\bar{S}$	$\bar{P}-\bar{A}$	$\frac{\bar{P}-\bar{A}}{\bar{P}}$, %	$\bar{P}-\bar{S}$	$\frac{\bar{P}-\bar{S}}{\bar{P}}$, %	$\bar{P}$	$\bar{A}$	$\bar{S}$	$\bar{P}-\bar{A}$	$\frac{\bar{P}-\bar{A}}{\bar{P}}$, %	$\bar{P}-\bar{S}$	$\frac{\bar{P}-\bar{S}}{\bar{P}}$, %
600 yd	1	84.03	83.43	81.80	+.60	+.71	+2.23	+2.65	82.85	83.43	81.80	−.58	−.70	+1.05	+1.27
	2	86.03	85.47	87.00	+.56	+.65	−9.7	−1.13	85.45	85.47	87.00	−.02	−.02	−1.55	−1.81
	3	90.07	87.93	89.60	+2.14	+2.38	+.47	+.52	90.07	87.92	98.10	+2.14	+2.38	+.97	+1.08
1,000 yd	4	159.40	154.60	156.90	+4.80	+3.01	+2.50	+1.57	159.40	153.55	156.90	+5.85	+3.67	+2.50	+1.57
	5	182.53	176.40	180.15	+6.13	+2.36	+2.38	+1.30	182.53	167.80	180.15	+14.73	+8.07	+2.38	+1.30
	6	175.03	166.08	166.07	+8.95	+5.11	+8.96	+5.12	175.03	160.30	166.07	+14.73	+8.42	+8.96	+5.12
1 mile	7	296.80	280.00	287.10	+16.80	+5.66	+9.70	+3.27	296.80	280.00	287.10	+16.80	+5.66	+9.70	+3.27
	8	315.46	300.53	314.47	+14.98	+4.73	+.99	+.31	312.32	300.53	314.47	+11.70	+3.75	−2.24	−.72
	9	291.90	308.67	306.43	−16.77	−4.75	−14.53	−4.98	91.90	299.90	306.43	−8.00	−2.74	−14.53	−4.987
Mean difference for 9 runners					+4.24	+2.21	+1.30	+.96			+6.37	+3.17	+.80	+.80	+.60
"t" values					1.30	1.91	.56	1.00				2.23	2.46	.24	.70
2-tailed probability values					NS	.10	NS	NS				.10	.05	NS	NS

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[1] Symbols defined in earlier tables.

Both the analyses including session 8 and those excluding it show that the subjects ran slightly faster under secobarbital (50 mg. per 70 kg.) than under placebo. However, none of those comparisons reached the 0.20 level of significance.

Experiment 3.—Five of the eight subjects in experiment 3 ran faster under influence of amphetamine than placebo; three ran slower. Considered as a group, the subjects had an average amphetamine time which was 1.08 seconds faster than that for placebo. The corresponding percentage difference was 0.89%. However, neither of these comparisons reached the 0.20 level of significance. We believe this lack of significance was due partly to uncontrolled weather variables. (As mentioned before, this experiment was carried out during the winter on an outdoor track. The temperature varied from 25 to 69 F. The wind velocity varied from 8 to 23 miles per hour. To assess the effect of variations in temperature on running time, each subject's score on the warmest amphetamine day was subtracted from his score on the coldest amphetamine day; then the same was done for his two placebo days and two secobarbital days. The mean of these three difference scores was then obtained. The resulting score showed the effect of temperature with the drug-effect controlled. Seven of the eight subjects ran faster on the warm days than on the cold days. The mean difference for the group was 2.89 seconds. A comparable analysis was performed to evaluate the effect of variations in wind velocity. Seven of the eight subjects ran faster on the less windy days. The mean difference for the group was 2.20 seconds.)

Experiment 4.—Table 7 presents the results obtained with the nine marathon runners performing under placebo, secobarbital (50 mg. per 70 kg.), and three different dosages of amphetamine (7, 14, and 21 mg. per 70 kg. of body weight). Data obtained under the three dosage levels of amphetamine were combined in the comparisons shown in table 7. Six of the subjects ran faster under influence of amphetamine than placebo; three ran slower. Considered as a group the subjects ran an average of 24.12 seconds faster under influence of amphetamine than placebo ("t"=2.13; $p<0.10$). The mean difference was 1.07% ("t"=1.72; $p<0.20$).

As in experiment 3, the performances of experiment 4 occurred out of doors during late winter. Weather variable added to the variability of the date and tended to reduce the statistical significance of the improvement shown under amphetamine by the group.

There were reasons for questioning the validity of the data contributed by all three of the subjects who ran faster under influence of placebo than amphetamine; however, the decision was made to retain their data. Subject 6 had only one placebo session. Subject 4 indicated on his performance analyses that 9 of his 12 performances (75%) were not "all-out" efforts. The corresponding average for the remaining eight subjects was 15%. All subjects had been asked to make each effort an "all-out" one. In general, subject 4 did not appear to grasp the concept of a controlled experiment. He was the subject who altered his course on one occasion. The result of one of his races was recorded in the requirements of the experiment were also found in his data.

Both the fastest time and slowest time for subject 2 occurred under the 21 mg. per 70 kg. dose of amphetamine. That slow amphetamine race occurred the day after the subject had "run himself into the ground" in a hard 15-mile race wearing 10 lb. of clothing. The runner's written comments made after the race follow:

"First I would like to say that I was wearing 10 pounds of clothing (my boots alone weighing 3½ lb.) in my 15 miles workout last night in which "I ran myself into the ground.' This was the hardest work-out I'd had in months. Needless to say, I was very tired today. I feel therefore that had I done 6 miles (not too hard) instead of 15 miles last night, a time equal to or better than my best time of 33:25 would not have been unreasonable. I was thinking in terms of a 35 minutes-something, work-out before my first medication. And yet, after a ½ hr. sleep between capsules and just after my second, my mood and outlook changed substantially, so I estimated 34:40. However, while running my first 100 yards I wished I'd estimated even something around 36:00 minutes—my legs just wouldn't go and I felt very tired. But since I feel it a responsibility to do my very best in order to make these experiments worth while, I pushed myself hard and worked my arms harder than usual. I soon established a better racing pace but it was just one hell of a grind *all* the way. My time was 34:08.7. I was amazed that I could force myself so much today. My legs felt light and loose afterwards and I enjoyed a 2 mile jog. I have had a tingling and chilled sensation of my body since the run. As a summary, I feel this was the most substantial mental and physical change I have ever experienced in such a short period of time."

TABLE 7.—COMPARATIVE EFFECTS, IN EXPERIMENT 4, OF AMPHETAMINE SECOBARBITAL, AND PLACEBO ON PERFORMANCE OF 9 MARATHON RUNNERS[1]

Subject No.	Distance (miles)	Time in minutes and seconds			Comparative times in seconds			
		$\bar{P}$	$\bar{A}$[2]	$\bar{S}$	$\bar{P}-\bar{A}$	$\frac{\bar{P}-\bar{A}}{\bar{P}}$, %	$\bar{P}-\bar{S}$	$\frac{\bar{P}-\bar{S}}{\bar{P}}$, %
1	7.0	48:39.00	48:00.00	49:07.50	+39.00	+1.34	−28.50	−0.98
2	5.8	32:39.35	32:45.30	33:47.00	−5.95	−.30	−67.65	−3.45
3	12.7	87:35.67	87:18.00	92:05.00	+17.67	+.34	−269.33	−5.12
4	6.0	31:20.00	31:42.00	31:20.67	−22.00	−1.17	−.67	−.04
5	6.8	42:20.00	41:18.00	41:38.33	+62.00	+2.44	+41.67	+1.64
6	4.5	26:04.00	26:28.00	27:02.00	−24.00	−1.53	−58.00	−3.71
7	4.7	26:44.00	25:45.63	26:20.50	+58.37	+3.64	+23.50	+1.47
8	7.25	43:21.00	42:39.58	42:54.33	+41.42	+1.59	+26.67	+1.03
9	4.7	25:40.00	24:49.43	25:34.65	+50.57	+3.28	+5.35	+.35
Mean difference for 9 runners					+24.12	+1.07	−36.33	−.98
"t" values					2.13	1.72	1.15	1.17
2-tailed probability values					.10	.20	NS	NS

[1] Dosages of 7, 14, and 21 mg. of amphetamine per 70 kg. of body weight and 50 mg. of secobarbital per 70 kg. of body weight were given.

[2] The three amphetamine dose levels were combined in obtaining the A values.

To compare different dose levels, it was planned that each subject would run twice under each of three dose levels of amphetamine. Due to illness and adverse weather, only three subjects completed all sessions. Of the sessions run, three were discarded as mentioned under "method." Four of the nine subjects made only one run under the 7-mg. dose, five made only one run under the 14-mg. dose, and five made only one run under the 21-mg. dose. Furthermore, 10 of the sessions retained were performed under conditions of moderate physical impairment or weather adversity. These considerations require cautious interpretation of the data. The subjects ran faster on the average under 14-mg. doses of amphetamine than under 7-mg. doses, and still faster under the 21-mg. dose, but the factors mentioned cast doubt on the accuracy of the differences observed in results after use of the three dose levels. The subjects ran 0.06% slower, 0.30% faster, and 2.54% faster under the 7-mg., 14-mg., and 21-mg. doses, respectively, than after taking the placebo. The first two comparisons were not significant at the 0.20 level. The third was significant beyond the 0.10 level. Because of the uncontrolled factors mentioned and because half the subjects had a given dose level only once, the comparisons at the three separate dose levels were less stable than the comparison combining all three. The standard error for the combined analysis was 0.62%, while those for the comparisons based on 7-mg., 14-mg., and 21-mg. dose performances considered separately were 0.89%, 0.83%, and 1.21% respectively.

Experiments 2, 3, and 4 Combined.—In all three experiments using runners as subjects, the groups ran faster under the influence of amphetamine than under placebo. The man improvement scores were 2.21%, 0.89%, and 1.07% for experiments 2, 3, and 4 respectively. This is slightly higher than the mean improvement found with the swimmers of experiment 1. In spite of this the statistical evaluations of the data obtained with the runners were in no case as convincing as those based on the data obtained with the swimmers. This was due in part to factors already mentioned which increased the instability of the data.

The data are stabilized somewhat by combining the three experiments. (The standard error for the anlysis combining the percentage scores of experiments 2, 3, and 4 is only 0.60%; those for experiments 2, 3, and 4, considered individually, are 1.34%, 1.23%, and 0.62% respectively.) Since the various subjects ran various distances (440 yards to 12.7 miles) the combined analysis was performed on the percent scores $(\bar{P}-\bar{A}/\bar{P}\%)$ only. Combining the three groups yields a mean improvement under amphetamine of 1.40%. The "t" value for this combined analysis is 2.42, which almost reaches the 0.02 level of significance. A further combined analysis was carried out excluding session 8 in experiment 2. This produced a mean difference of 1.74% ("t"=2.75; $p<0.02$).

Experiment 5.—The nine 35-lb. weight-throwers and the four 16-lb. shot-putters contributed data which have been evaluated in terms of maximum distances thrown and mean distances thrown under each medication.

Each man threw approximately 15 to 25 times each day. Each day a subject's maximum and mean throws were determined. The mean of each subject's maximum throws under each drug condition appears in table 8. Column 1 presents the mean of each subject's maximum throws for his placebo days. Columns 2 and 3 show the means of the maximum throws for the amphetamine and secobarbital days respectively. Column 4 shows the comparison of each subject's maximum score under influence of amphetamine with his maximum score under placebo. Column 5 expresses the amphetamine—placebo difference as a percentage of the placebo score.

Table 9 presents similar information concerning the effects of amphetamine and secobarbital on the mean distances thrown. Table 10 presents the results of statistical analysis of the data reported in tables 8 and 9.

Under "Method" we mentioned that the weight-throwing analyses were carried out both including and excluding the results obtained with three subjects whose data were sparse and in our judgment unreliable. Table 10 gives the results of four separate evaluations of each type of score: the first is based on the data of the six 35-lb. weight-throwers who contributed six or more sessions; the second is based on the data of the four 16-lb. shot-putters; the third combines these two groups; the fourth is based on the data of all 13 subjects, including the three subjects whose data are questionable.

Table 10 shows that all amphetamine versus placebo analyses based on the total group of 13 are significant beyond the 0.10 level. The analyses which exclude the three subjects mentioned above yield even clearer demonstrations of an amphetamine effect. (All are significant beyond the 0.01 level.)

With regard to the maximum distance scores, the six weight-throwers and four shot-putters obtained average improvement scores of 2.50 ft. and 1.48 ft. respectively, under influence of amphetamine. The average improvement for the group of 10 was 2.09 ft. This group effect yields a "t" of 5.84, which is significant beyond the 0.001 level. The corresponding improvement scores for these three groups were 5.41%, 3.30%, and 4.56%.

The results obtained with the evaluation of mean distance scores are very similar to those obtained when the comparisons were made on the basis of maximum distance scores. Under amphetamine (14 mg. per 70 kg.) the 6 weight-throwers obtained an average improvement of 1.99 ft., the 4 shot-putters improved 1.78 ft., and the total group of 10 improved 1.91 ft. This average improvement of 1.91 ft. yields a "t" of 4.10, which is beyond the 0.01 level of significance. The corresponding average improvement scores are 4.53%, 4.19%, and 4.39% for the weight-throwers, shot-putters and combined groups respectively. Both with respect to maximum scores and mean scores the six 35-lb. weight-throwers obtained statistically significant improvement ($p<0.10$) under influence of secobarbital. The four 16-lb. shot-putters obtained impairment. The total group of 10 showed improvement for both maximum and mean scores but neither comparison reached the 0.20 level of significance.

Experiment 6.—Table 11 shows the average swimming time of each of the 16 swimmers under influence of amphetamine and placebo. It also shows each subject's goal ("steak time"), the difference between his mean time under placebo and his mean time under amphetamine, and the percent improvement or impairment produced by amphetamine. Eleven of the 16 subjects swam faster under influence of amphetamine than placebo. Table 12 presents average magnitude and average percentage effects for the 6 100-yd. swimmers, for the 10 200-yd. swimmers, and for the 16 swimmers taken as a group. It also presents the results of the statistical evaluation of these comparisons. The average amphetamine improvement for the 16 100-yd. swimmers was 0.56 second; that for the 10 200-yd. swimmers was 0.68 second; that for the 16 men considered as a single group was 0.63 second. The total grop "t" yields a mean difference of 0.63 second, of 2.14 which is significant beyond the 0.05 level. The mean improvement scores for the 6 100-yd. men, the 10 200-yd. men and the total group of 16 were 0.95%, 0.45%, and 0.64% respectively. The "t" value for the 0.64% improvement shown by the total group was 2.49, with a corresponding two-tailed probability values of <0.10, beyond the 0.05 level.

TABLE 8.—COMPARATIVE EFFECTS, IN EXPERIMENT 5, OF AMPHETAMINE SULFATE, SECOBARBITAL, AND PLACEBO ON MAXIMUM DISTANCES THROWN BY 9 35-LB WEIGHT THROWERS AND 4 16-LB SHOT PUTTERS[1]

Subject, No. [2]	Distance, feet [3]							
	$\overline{P}$	$\overline{A}$	$\overline{S}$	$\overline{A-P}$	$\frac{\overline{A-P}}{\overline{P}}$, %	$\overline{S-P}$	$\frac{\overline{S-P}}{\overline{P}}$, %	$\overline{A-S}$
WT 1	46.9	50.1	49.6	+3.2	+6.82	+2.7	+5.76	+0.5
WT 2	51.9	54.8	53.1	+2.9	+5.59	+1.2	+2.31	+1.7
WT 3	41.3	45.0	42.8	+3.7	+8.96	+1.5	+[illegible].63	+2.2
WT 4	45.3	49.6	47.1	+4.3	+9.49	+1.8	+[illegible].97	+2.5
WT 5	59.8	60.5	59.8	+.7	+1.17	0	0	+.7
WT 6	49.1	49.3	48.6	+.2	+.41	−.5	−1.02	+.7
SP 1	48.6	51.8	47.8	+3.2	+6.58	−.8	−1.65	+4.0
SP 2	40.0	40.4	39.0	+.4	+1.00	−1.0	−2.50	+1.4
SP 3	34.7	35.0	34.1	+.3	+.86	−.6	−1.73	+.9
SP 4	42.0	44.0	42.6	+2.0	+4.76	+.6	+1.43	+1.4
WT 7 [4]	47.5	45.5	45.0	−2.0	−4.21	−2.5	−5.26	+.5
WT 8 [4]	61.0	59.0	60.0	−2.0	−3.28	−1.0	−1.64	−1.0
WT 9 [4]	48.0	49.0	43.8	+1.0	+2.08	−4.2	−8.75	+5.2

[1] Dosage of 14 mg amphetamine sulfate per 70 kg of body weight and 50 mg of secobarbital per 70 kg of body weight was given.

[2] 35 lb. weight throwers are marked WT; 16-lb shot putters are marked SP.

[3] Symbols are defined in preceding tables.

[4] Weight throwers whose data we judged to be unreliable, before determining which drugs were given on which days (see text).

TABLE 9.—COMPARATIVE EFFECTS, IN EXPERIMENT 5, OF AMPHETAMINE SULFATE, SECOBARBITAL, AND PLACEBO ON MEAN DISTANCES THROWN BY 9 35-LB WEIGHT THROWERS AND 4 16-LB SHOT PUTTERS

Subject No.	Distance in feet [2]							
	[illegible]	$\overline{A}$	$\overline{S}$	$\overline{A-P}$	$\frac{\overline{A-P}}{\overline{P}}$, %	$\overline{S-P}$	$\frac{\overline{S-P}}{\overline{P}}$, %	$\overline{A-S}$
WT 1	42.91	42.[illegible]	[illegible]	+0.07	+0.16	+2.02	+4.71	−1.95
WT 2	47.99	49.71	[illegible]	[illegible].72	+3.58	+1.12	+2.33	+.60
WT 3	39.20	42.44	40.[illegible]	[illegible]3.24	+8.27	+.92	+2.35	+2.32
WT 4	42.41	46.44	44.90	+4.03	+9.50	+2.49	+5.87	+1.54
WT 5	55.69	57.19	56.16	+1.50	+2.69	+.47	+.84	+1.03
WT 6	45.87	47.23	46.47	+1.36	+2.96	+.60	+1.31	+.76
SP 1	45.63	49.93	45.84	+4.30	+9.42	+.21	+.46	+4.09
SP 2	38.33	39.44	35.28	+1.11	+2.90	−3.05	−7.96	+4.16
SP 3	33.28	33.53	32.80	+.25	+.75	−.48	−1.44	+.73
SP 4	40.06	41.53	40.58	+1.47	+3.67	+.52	+1.30	+.95
WT 7 [3]	44.14	43.16	41.50	−.98	−2.22	−2.64	−5.98	+1.66
WT 8 [3]	59.02	55.00	57.10	−4.02	−6.81	−1.92	−3.25	−2.10
WT 9 [3]	42.99	45.67	39.72	+2.68	+6.23	−3.27	−7.61	+5.95

[1] 35-lb weight throwers are marked WT; 16-lb shot putters are marked SP.

[2] Symbols are defined in earlier tables.

[3] Weight throwers whose data we judged to be unreliable, before determining which drugs were given on which days (see text).

TABLE 10.—STATISTICAL EVALUATIONS, IN EXPERIMENT 5, OF THE COMPARATIVE EFFECTS OF AMPHETAMINE SULFATE, SECOBARBITAL AND PLACEBO ON PERFORMANCE OF 9 35-LB WEIGHT-THROWERS AND 4 16-LB SHOT-PUTTERS

[Comparisons are given both in terms of average magnitude of effect and average percent of effect for both maximum scores and mean scores]

	Average magnitude of effect [1]									Average percent of effect [1]					
	$\overline{A}$ vs. $\overline{P}$	"t"	p	$\overline{S}$ vs. $\overline{P}$	"t"	p	$\overline{A}$ vs. $\overline{S}$	"t"	p	$\overline{A}$ vs. $\overline{P}$	"t"	p	S vs. P	"t"	p
Comparisons based on maximum throws:															
6 weight-throwers	+2.50	3.68	0.02	+1.12	2.32	0.10	+1.38	3.91	0.02	+5.41	3.44	0.02	+2.44	2.34	0.10
4 shot-putters	+1.48	2.13	.20	−.45	−1.25	NS	+1.93	2.75	.10	+3.30	2.33	.20	−1.11	−1.28	NS
6 weight-throwers plus 4 shot-putters	+2.09	5.84	.001	+.49	1.22	NS	+1.60	4.72	.01	+4.56	4.14	.01	+1.02	1.14	NS
All 13 subjects	+1.38	2.43	.05	−.22	−.43	NS	+1.59	3.55	.01	+3.09	2.57	.05	−.42	−.38	NS
Comparisons based on mean throws:															
6 weight-throwers	+1.99	3.42	.02	+1.27	3.84	.02	+.27	1.21	NS	+4.53	3.09	.05	+2.90	3.60	.02
4 shot-putters	+1.78	2.03	.20	−.70	−.86	NS	+2.48	2.62	.10	+4.19	2.26	.20	−1.91	−.91	NS
6 weight-throwers plus 4 shot-putters	+1.91	4.10	.01	+.48	1.01	NS	+1.42	2.52	.05	+4.39	4.05	.01	+.98	.82	NS
All 13 subjects	+1.29	2.10	.10	−.23	−.44	NS	+1.52	2.42	.05	+3.16	2.46	.54	−.05	−.44	NS

[1] $\overline{A}$ vs. $\overline{P}$, $\overline{S}$ vs. $\overline{P}$, and $\overline{A}$ vs. $\overline{S}$ values are mean difference values based on scores presented in tables 8 and 9.

As mentioned before, two of the swimmers contributed data which we judged (before the drugs administered were known in the given cases) to be less reliable than that of the other 14 subjects. Eliminating these two subjects raised the mean improvement from 0.63 second to 0.71 second and changed the "t" value from 2.14 to 2.13. The mean improvement was raised from 0.64% to 0.72% and the "t" value changed from 2.49 to 2.50.

Table 13 presents the average magnitude and average percentage effects for each of the five subgroups of subjects. One man in each subgroup swam faster under the influence of placebo than of amphetamine. However each of the five subgroups considered as a unit, swam faster under influence of amphetamine.

The sixth session was one in which the motivation and attitude of certain of the subjects may have been different from that of earlier sessions. Whether the whole group won steak dinners depended on the final performance of two of the subjects. On the other hand, five of the subjects had reached the "steak time" criterion on each of their first five performances and came to the sixth session knowing they had won their two steak dinners and could win no more. A final analysis was performed eliminating session 6. The results were very similar to those obtained including session 6. The total group of 16 subjects swam an average of 0.67 second faster under influence of amphetamine than placebo ("t"=1.86; $p<0.10$). The corresponding improvement was 0.53% ("t"=1.89; $p<0.10$).

Data from Phase 1.—Fourteen swimmers and six runners were studied in phase 1 while medicated with placebo or 7 mg. of amphetamine per 70 kg. body weight. The results obtained with each subject are presently in table 14. That table also indicates the event performed by each subject, the number of placebo and amphetamine medicaments used, the time interval between taking the medicament and beginning the performance, and whether the event was performed individually or competitively. Since a wide range of distances is represented among these subjects (50 yd. to 440 yd. for the swimmers, and 440 yd. to two miles for the runners) we carried out statistical tests only on the percentage improvement or impairment scores shown in the last column on the right. Eleven of the 14 swimmers swam faster under influence of amphetamine than placebo. The mean improvement for the swimmers taken as a group was 0.53%. This group improvement yields a "t" value of 2.04, which is beyond the 0.10 level of significance using a two-tailed test. The nine subjects who swam individually contributed considerably more to the group improvement than did those five who swam in competition.

Two of the six runners ran faster under influence of amphetamine than placebo. Four ran slower. The average impairment was 0.40% and did not reach the 0.20 level of significance.

TABLE 11.—COMPARATIVE EFFECTS, IN EXPERIMENT 6, OF AMPHETAMINE SULFATE AND PLACEBO ON PERFORMANCE TIMES OF 16 SUBJECTS SWIMMING UNDER RESTED CONDITIONS 2 HOURS AFTER MEDICATION.

Subject No.	Time in seconds				
	"Steak time" goal	$\bar{P}$	$\bar{A}$		$\frac{\bar{P}-\bar{A}}{\bar{P}}$, %
Free style, 100 yd:					
1	55.20	55.68	54.58	+1.10	+1.98
2	58.20	58.31	57.30	+1.01	+1.73
3[1]	55.50	56.83	57.00	−.17	−.30
Butterfly, 100 yd:					
4[1]	62.50	63.46	62.67	+.79	+1.24
5	66.20	66.23	65.11	+1.12	+1.69
6	75.80	77.18	77.70	−.52	−.67
Free style, 200 yd:					
7	136.20	130.59	130.21	+.38	+.29
8	136.20	136.28	137.55	−1.27	−.93
9	136.10	137.80	136.33	+1.47	+1.07
Back stroke, 200 yd:					
10	158.20	157.39	154.98	+2.41	+1.53
11	165.20	166.89	167.79	−.90	−.54
12[1]	142.00	145.03	141.71	+3.32	+2.29
Breast stroke, 200 yd:					
13[1]	158.20	156.13	155.54	+.59	+.38
14[1]	171.20	176.74	177.09	−.35	−.20
15	175.90	174.31	173.37	+.94	+.54
16	171.20	171.47	171.28	+.19	+.11

[1] Subjects 3, 4, 12, 13, and 14 were the 5 who swam alone. The others swam in competition, groups of 2 or 3 men.

TABLE 12.—STATISTICAL EVALUATIONS IN EXPERIMENT 6, OF THE COMPARATIVE EFFECTS OF AMPHETAMINE SULFATE AND PLACEBO ON PERFORMANCE TIMES OF SIXTEEN SUBJECTS SWIMMING UNDER RESTED CONDITIONS 2 HOURS AFTER MEDICATION

	(1)			(2)		
	$\overline{P-A}$	"t"	P	$\frac{\overline{P-A}}{P}$, %	"t"	P
100 yd swimmers (n=6)	+0.56	1.90	0.20	+0.95	2.03	0.10
200-yd swimmers (n=10)	+.68	1.50	.20	+.45	1.49	.20
Combined groups (n=16)	+.63	2.14	.05	+.64	2.49	.05
Analysis eliminating 2 subjects (n=14)	+.71	2.13	.10	+.72	2.50	.05

[1] $\overline{P-A}$=mean difference values based on the $\overline{P-A}$ scores presented in table 11.

[2] $\frac{\overline{P-A}}{P}$, %=mean difference values based on the $\frac{\overline{P-A}}{P}$, % scores presented in table 11.

TABLE 13.—COMPARATIVE EFFECTS OF AMPHETAMINE SULFATE AND PLACEBO ON PERFORMANCE TIMES OF 5 GROUPS OF SUBJECTS, SWIMMING UNDER RESTED CONDITIONS 2 HR AFTER MEDICATION

	$\overline{P-A}$[1]	P-$\overline{A}$P, %[2]
100-yd free style swimmers (n-3)	+0.65	+1.14
100-yd butterfly swimmers (n-3)	+0.46	+0.75
200-yd free style swimmers (n-3)	+0.19	+0.14
200-yd backstroke swimmers (n-3)	+1.61	+1.08
200-yd breast stroke swimmers (n-4)	+0.34	+0.21

[1] $\overline{P-A}$=mean difference values based on the $\overline{P-A}$ scores presented in table 11.

[2] $\frac{\overline{P-A}}{P}$, %=mean difference values based on the $\frac{\overline{P-A}}{P}$, % scores presented in table 11.

TABLE 14.—COMPARATIVE EFFECTS OF AMPHETAMINE SULFATE AND PLACEBO ON PERFORMANCE TIMES OF 6 RUNNERS AND 14 SWIMMERS[1]

Subject No.	Distance of performance (yards)	Type of performance	Hours after medication	Competitive or individual	#P	$\overline{P}$	#A	$\overline{A}$	$\overline{P}-\overline{A}$	$\frac{\overline{P}-\overline{A}}{\overline{P}}\%$
Runners:										
1	3,520		1	I	3	10:03.55	3	10:28.13	−24.58	4.07
2	1,760		1	I	3	5:20.27	3	5: 9.23	+11.04	+3.45
3	440		1	I	3	50.38	3	50.95	−.57	1.13
4	440		1	I	3	55.09	3	54.70	+.39	+.71
5	880		1	I	3	2:24.32	3	2:24.50	−.18	−.12
6	880		1	I	3	2:09.85	3	2:11.42	−1.57	−1.21
Swimmers:										
1	440	Free style	2.5	C	4	5:14.13	4	5:18.75	−4.62	−1.47
2	440	do	2.5	C	3	5:01.6	3	5:02.9	−1.30	−.43
3	75	do	2.5	C	4	38.63	3	38.50	+.13	+.34
4	50	do	2.5	C	3	23.1	3	22.87	+.23	+1.00
5	50	do	2.5	C	3	25.47	3	25.23	+.24	+.94
6	75	Butterfly (dolphin)	1	I	3	47.80	3	47.00	+.80	+1.67
7	75	Free style	1	I	3	41.17	3	41.15	+.02	+.05
8	75	do	1	I	3	39.70	3	39.63	+.07	+.18
9	75	do	1	I	6	39.25	6	38.57	+.68	+1.73
10	200	do	1	I	3	2:12.50	3	2:10.77	+1.73	+1.31
11	100	do	1.75	I	9	61.02	5	61.56	.54	−.88
12	100	Butterfly (dolphin)	1.75	I	7	71.59	4	71.28	−.31	+.43
13	440	Free style	1.75	I	10	5:28.52	5	5:24.34	+4.18	+1.27
14	75	Butterfly (wedge)	1	I	3	49:70	3	49:10	+.60	+1.21

[1] #P and #A indicate the number of placebo and amphetamine sessions, respectively. The other symbols are defined in earlier tables. The $\overline{P}$ and $\overline{A}$ times are expressed in minutes and seconds. See text for report on statistical analysis of above data.

COMMENT

Problems of Control.—Detailed and perhaps tedious descriptions have been given of the attempts made in the various experiments to control all factors which might influence the comparisons of amphetamine and placebo. Where weather variables, lack of interest, or cooperation on the part of subjects or other factors appeared to influence the results, we have so indicated. The reader has been burdened with these details because we believe they are essential to evaluation of the results presented. A perfectly "controlled" experiment on the behavior of human subjects is an ideal rarely if ever achieved. In the experiments presented above, three things were done to maximize control over extraneous factors. First, the cooperation of the subject was sought by explaining the general purpose of the investigation and by stressing the fact that he was more than just the subject. We tried to inspire all subjects to meet the responsibilities imposed by the experiment. An overwhelming majority of the subjects did so.

Second, devices were developed to enable the subject to report his subjective reactions before, during and after each performance. This material will be reported subsequently.

Third, the experiments were designed so that each subject would be studied several times under each drug, the aim being to minimize the effects of inevitable chance factors which might influence any single performance.

Recapitulation of Findings.—The experiments presented above indicated that 14 mg. of amphetamine per 70 kg. of body weight taken two to three hours before running, swimming, or weight throwing improved the performance of the athletes, considered as groups. (Some individuals in each group showed impairment rather than improvement). In the first experiment, 14 of the 15 swimmers (93%) were helped by amphetamine when swimming under rested conditions and 67% were helped when swimming under fatigued conditions. In experiment 6, swimming under rested conditions at maximum or near maximum motivation, 69% were helped. Of the 26 runners tested under rested conditions in experiments 2, 3, and 4, 73% were helped. Eighty-five percent of the weight-throwers tested under rested conditions were helped. The improvement shown by all three groups of athletes was statistically significant. The levels are indicated above.

In terms of the amount of improvement shown by the three classes of subjects, the weight-throwers were first. As a group they showed an improvement of from 3 to 4%. The 26 runners had a mean improvement of approximately 1.5%. The swimmers showed varying degrees of improvement in the various test situations (from 0.59 to 1.16%). The amount of improvement shown has practical importance as well as statistical significance. The subjects of this study were highly trained athletes. Such individuals may spend months working for an improvement of 1 or 2%.

The 100 mg. per 70 kg. dose of secobarbital produced a significant impairment in the performance of the subjects (15 swimmers in experiment 1) receiving it. The 50 mg./70 kg. dose produced effects which were in general not significant. Two groups of runners showed slight impairment, and one group showed slight improvement of performance. The weight-throwers obtained a slight improvement. One subgroup of subjects in the latter study obtained an improvement in performance under 50 mg. of secobarbital which was statistically significant. (The secobarbital was used primarily to prevent the subject from correctly assuming he had received a "pep pill" whenever he thought he perceived drug-effects. It was also included to permit a study of the relationship between mood change and change in performance. Both amphetamine and secobarbital are thought to have euphoretic power. Data concerning these questions will be presented later.)

Considered as groups, the 15 swimmers of experiment 1 and the 17 runners of experiments 2 and 3 performed poorer (under placebo) during the experimental sessions than during meets with other schools. No such comparison was possible with the 9 marathon runners because they did not run competitive distances for the experiment. Considered as a group, the 13 weight-throwers threw as far in the placebo experimental sessions as in meets. The 16 swimmers of experiment 6, who performed under the special motivation described above, achieved experimental times which were, in general, equal to their meet times.

Generalization Concerning Intercollegiate Competition.—The findings presented above do not prove that athletes performing in intercollegiate meets would be helped by amphetamine. Practical considerations prevented our testing the drug under conditions of official school competition. However, experiments 5 and 6 succeeded in obtaining "all out" efforts from the subjects and thus provided pertinent information which should be stressed. Experiment 6 was designed specifically to stimulate maximum effort and to approximate the psychological atmosphere of a competition with another college. The 16 subjects, considered as a group, swam as fast during the experimental sessions as they had during meets with other schools. Under these circumstances amphetamine produced an improvement in performance which was significant beyond the 0.05 level.

In experiment 5 the 13 weight-throwers achieved experimental performances which were as good as those they achieved in intercollegiate meets. Here, also, amphetamine produced an improvement for the group which had both practical and statistical significance. The average improvement was from 3 to 4%.

Both the subjective data to be reported subsequently and the measured performance data reported above, indicate that amphetamine sulfate, in the 14 mg. per 70 kg. of body weight dose, taken two to three hours before an intercollegiate meet will improve the performance of the majority of runners, swimmers, and weight-throwers.

SUMMARY AND CONCLUSIONS

Six experiments were carried out on swimmers, runners, and weight-throwers to determine whether amphetamine sulfate in the dose of 14 mg. per 70 kg. of body weight improves the measured performance of such athletes. The experiments employed the double-blind procedure, placebos, and additional comparison medications (50 and 100 mg. per 70 kg. of secobarbital). Eighteen swimmers were studied a total of 453 times, 26 runners gave 205 performances, and 13 weight-throwers gave 123. The medicaments were given orally, and the performances were measured from two to three hours after the subjects had taken either amphetamine or placebo. The experimental conditions maintained and the methods used to evaluate performance were described in detail. The results of each experiment were evaluated statistically. Data obtained in an exploratory investigation using a smaller dose level of amphetamine (7 mg. per 70 kg.) were also reported.

In all three classes of athletes, the majority of subjects performed better under influence of amphetamine (14 mg. per 70 kg.) than placebo. The improvement was statistically significant for all three classes of athletes. Eighty-five per cent of the weight-throwers, 73% of the runners and from 67 to 93% of the swimmers performed better under influence of amphetamine than placebo. The weight-throwers obtained the greatest amount of improvement from amphetamine (from 3% to 4%); the runners obtained an improvement of approximately 1.5%; the swimmers showed varying degrees of improvement in the various test situations (from 0.59 to 1.16%). The relationship of the data obtained to the use of amphetamine in intercollegiate competition was discussed.

This study has shown that the performance of highly trained athletes, of the classes studied, can be significantly improved in the majority of cases (about 75%) by the administration of amphetamine.

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APPENDIX 12

AMPHETAMINE, SECOBARBITAL, AND ATHLETIC PERFORMANCE

II. SUBJECTIVE EVALUATIONS OF PERFORMANCES, MOOD STATES, AND PHYSICAL STATES

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An earlier paper[1] presented data showing that, in comparison with placebo, amphetamine sulfate, 14 mg., improved the performance of athletes; secobarbital sodium, 100 mg., impaired it; and secobarbital sodium, 50 mg., neither improved nor impaired athletic performance. The present paper deals with the subjective responses given by these same subjects (swimmers, runners, and weight-throwers) before and after they performed their athletic events. It presents quantitative data dealing with the drug effects reported by the athletes concerning specific aspects of performance, mood, and physical states.

METHOD

The earlier paper concerning objective performance[1] gave detailed descriptions of the characteristics of the experiments carried out with athletes. Table 1 summarizes the number and type of subjects used in each experiment, the number and types of medicaments used, the time intervals between medication and performance, and other methodological details essential to an understanding of the subjective data reported below.

Subjects.—Eighteen swimmers were studied 453 times, 26 runners gave 205 performances, and 13 weight-throwers gave 123 performances. All subjects except nine runners were members of college varsity or freshman teams. These nine were marathon runners, most of whom were beyond college age. All of these athletes were highly trained and in middle or late season condition. Six separate experiments were carried out with these 57 subjects (see table 1).

Amphetamine and secobarbital were compared with a placebo as to their effects on 57 college athletes. Performance was measured objectively. Subjective estimates of performance and mood were also obtained. Performance was significantly improved by 14 mg. of amphetamine sulfate, significantly impaired by 100 mg. of secobarbital, and not significantly influenced by 50 mg. of secobarbital. Subjects reported that amphetamine stimulated them, improved coordination and form, increased strength and endurance, and increased feelings of mental and physical activation, boldness, elation, and friendliness. The 100-mg. dose of secobarbital produced intoxication, elation, "deactivation," and distortion in judgment; the 50-mg. dose produced elation and activation.

Medication Procedures.—All subjects in all experiments took placebos. In addition, those in experiment 1 took amphetamine sulfate (14 mg.) and secobarbital sodium (100 mg.) on different occasions; those in experiments 2, 3, and 5 took 14 mg. of amphetamine but 50 mg. of secobarbital. The subjects in experiment 4 took 50 mg. of secobarbital and took amphetamine in three different dosages (7, 14, and 21 mg.); the results obtained with the three dose levels of amphetamine are combined in the present paper. The subjects of the sixth experiment took 14 mg. of amphetamine but no secobarbital. The medicaments were given on a body weight basis, the doses just mentioned being those given to a subject who weighed 70 kg. (154 lb.).

All medicaments were taken orally. Most subjects took each type several times (three on the average). In each study the drugs were given in a counter-balanced order which was unknown to the investigator collecting the data and unknown to the subjects. The athletes were told this was a study of the effect of "pep pills" on performance and that they would sometimes get blank pills instead of "pep pills." Secobarbital was not mentioned.

Preliminary studies (unpublished) indicated that the peak subjective effects of amphetamine occurred between two and four hours after administration, whereas those for secobarbital occurred between 30 minutes and two hours after administration. To obtain data during the period of maximum effect of each drug it was necessary, in the five experiments in which both active drugs were used, for the subjects to take two capsules each day. When a subject was scheduled to get secobarbital, his first capsule was a placebo; when he was scheduled to get amphetamine, the second was a placebo. Both capsules were placebos on placebo days. Table 1 shows the intervals maintained between the taking of active medicaments and the beginning of performance in each experiment.

Data Collected.—Once before taking each medicament, and twice afterward, each subject indicated his mood and physical states by responding to an 81 item check list. The subject checked each of the 81 items, in relation to his then present state, as either not applying, slightly applying, or definitely applying.[6]

In addition, after completing each performance, the subject responded to a questionnaire containing 15 to 20 questions which were designed to help him evaluate his performance in a detailed way. Most of these questions were constructed in such a way as to have the subject indicate whether, with respect to a particular characteristic, his performance on any given day was better than usual, usual, or worse than usual. In all experiments two of the questions were: Do you think the effects of the drug helped or hurt your performance today and if so, how much and in what ways? Do you think these effects would help or hurt you in actual competition and if so, how? These two questions will be referred to as "general questions." The remaining questions, which dealt with more specific aspects of performance, will be termed "detail questions." The questionnaire used by the runners is reproduced below. The questionnaires used by the swimmers and weight-throwers were similar in general nature and intent but different in specific content.

Please check each of the following items to indicate whether it applies more or less than is usual for you. Use the center box if you do not differ from your usual state on that item.

1. Was this effort: an all-out one?[ ] less than all-out? [ ]
2. Was this run: easier? [ ] usual? [ ] harder? [ ]
3. Before the run were you "revved up" and eager to run all-out: more? [ ] usual? [ ] less? [ ]
4. Did your legs feel: strong? [ ] usual? [ ] weak? [ ]
5. Was this: paced, controlled effort? [ ] usual? [ ] just run, almost automatically? [ ]
6. Did you feel you were going: faster? [ ] usual? [ ] slower? [ ]
7. Did your running feel: tight? [ ] usual? [ ] loose? [ ]
8. Did your running feel: ragged and fighting? [ ] usual? [ ] smooth and rhythmic? [ ]
9. Was your tiredness point: earlier? [ ] usual? [ ] later? [ ]
10. Was your body responsive to your will: better? [ ] usual? [ ] worse? [ ]
11. After getting tired were you able to drive yourself: better? [ ] usual? [ ] worse? [ ]

    If either better or worse, please give details:
12. Was your form: better than usual? [ ] usual? [ ] worse than usual? [ ]

    If better or worse, please explain:
13. Was your recovery: faster? [ ] usual? [ ] slower? [ ]

    If faster or slower, please explain:
14. Do you have any pains: yes? [ ] no? [ ] Is this usual? yes? [ ] no? [ ]

    Please explain, telling where and when:
15. Do you believe there were any effects produced by the medication that either helped or hurt your performance: yes? [ ] no? [ ]

    How much and in what ways:
16. Do you think these effects would help or hurt you in actual competition use: yes? [ ] no? [ ]

    How much and in what ways:
17. Can you think of anything you have not already mentioned (things you noticed either before, during, or after running) which might help us learn about the effect the medication you had today has on athletic performance:

Treatment of Data.—The same general methods of scoring and statistical evaluation were used with all the data reported in this paper. The data in table 6 (obtained with the check list dealing with mood and physical states) will be used to exemplify and describe these methods. A subject was given a score of one on an item on the check list if he checked it as not applying, a score of two if he checked it as slightly applying, and a score of three if he checked it as definitely applying. Since most subjects received each medicament several times, each subject's mean score for each item was computed for each drug condition. Each comparison reported in table 6 indicates the number of subjects in a given experiment having higher mean scores on a given item on amphetamine days than on placebo days, the number having equal mean scores under the two "drug" conditions and the number having higher means scores on placebo than on amphetamine days. Each probability value indicates the significance of the difference between the number of subjects having higher mean scores on amphetamine than on placebo days and the number having higher mean scores on placebo than on amphetamine days. If the number of subjects with higher amphetamine scores on a given item is significantly greater than the number with higher placebo scores on that item, it is stated that the group checked that item more on amphetamine than on placebo days; if the number of subjects with higher amphetamine scores is significantly lower than the number with higher placebo scores, it is stated that the group checked the item less on amphetamine than on placebo days. Comparisons failing to reach the

0.10 level of significance, with a two-tailed test, are called nonsignificant in this paper; those reaching the 0.10, 0.05, or 0.01 levels are said to be significant. The level of significance is specified in each case in the tables. The statistical test used to evaluate the comparisons just referred to is the binomial sign test.[3] The sign test is much faster than the *t* test, although less sensitive. Since the subjective comparisons were numerous, the speed afforded by the sign test was advantageous.

TABLE 1.—SUMMARY OF METHODS USED IN STUDYING THE EFFECTS OF AMPHETAMINE SULFATE AND SECOBARBITAL SODIUM ON ATHLETES[1]

Type of subject[2]	Experiment No.	Number of subjects	Number of sessions scheduled for each type of medication[3]			Dosage, mg per 70 kg of body weight		Minutes between medication and performance	
			P	A	S	A	S	A	S
Swimmer	1	15	4	4	4	14	100	120 and 180	55
Medium-distance runner	2	8	3	3	3	14	50	120	60
Medium-distance runner	3	8	2	2	2	14	50	120	60
Marathon runner	4	9	3	6	3	(7,14, and 21)	50	120	15
Weight-thrower	5	13	4	4	4	14	50	120	60
Swimmer	[4] 6	15	3	3	0	14	....	120	....

[1] P=placebo; A=amphetamine sulfate; S=secobarbital sodium.

[2] The subject in experiment 1 swam once each day under rested and once under fatigued conditions. The subjects in all other experiments performed only once each day, under rested conditions. Medium-distance runners means, in this report, men who ran between 440 yd and 1 mil. Marathon runners ran between 4.5 and 12.7 mi. There were 9 subjects in experiment 2, but the subjective data of 1 were discarded because he completed only 3 of the 9 scheduled sessions. The medium distance runners of experiment 3 ran outdoors during winter; those in experiment 2 ran indoors. The marathon runners also ran outdoors during winter. The marathon runners ranged in age from 22 to 41 yrs; the subjects in all other experiments were between 18 and 24 yrs of age. 9 weight-throwers threw the 35-lb weight and 4 put the 16-lb shot.

[3] Not all subjects completed all scheduled sessions; details concerning this are given in the earlier paper.

[4] 16 subjects participated in experiment 6, but the subjective data of 1 subject were discarded because he completed only 3 sessions. 12 of the subjects in experiment 6 were also used in experiment 1. The subjects in experiment 6 swam under conditions of high motivation, as described in the earlier paper.

TABLE 2.—SUBJECTIVE EVALUATIONS OF EFFECTS OF AMPHETAMINE, PLACEBO, AND SECOBARBITAL ON ATHLETIC PERFORMANCE[1]

Group of athletes	*	A>P	A=P	P>A	p	S>P	S=P	S=P	p
Do you think the medication you had today helped or hurt your performance? If so, how much and in what ways?									
Weight-throwers (n=13)		9	3	1	0.05	7	5	1	0.10
Runners (n=16), medium distance		6	10	0	.05	4	11	1	NS
Runners (n=9), marathon distance		5	4	0	.10	1	7	1	NS
Swimmers (n=15), experiment 1		(9)	(2)	(4)	(NS)	(6)	(5)	(4)	(NS)
Swimmers (n=15), experiment 6		(10)	(3)	(2)	(.05)	(2)	(2)	(2)	(2)
Swimmers (n=18), both groups combined		13	2	3	.05	(3)	(3)	(3)	(3)
Total (A vs. P, n=56; S vs. P, n=38)		33	19	4	.01	12	23	3	.05
Percent		59	34	7	....	32	60	8	....
Do you think the medication you had today would help or hurt you in actual competition? If so, how much and in what ways?									
Weight-throwers (n=13)		9	4	0	.01	7	3	3	NS
Runners (n=16), medium distance		4	11	1	NS	5	11	0	.10
Runners (n=9), marathon distance		5	4	0	.10	3	5	1	NS
Swimmers (n=15), experiment 1		(8)	(2)	(5)	(NS)	(5)	(3)	(7)	(NS)
Swimmers (n=15), experiment 6		(10)	(3)	(2)	(.05)	(2)	(2)	(2)	(2)
Swimmers (n=18), both groups combined		10	5	3	.10	(3)	(3)	(3)	(3)
Total (A vs. P, n=56; S vs. P, n=38)		28	24	4	.01	15	19	4	.05
Percent		50	43	7	....	39	50	11	....

[1] A=amphetamine sulfate; P=placebo; S=secobarbital sodium; see table 1 for dosages. A>P=number of subjects reporting more help from amphetamine than placebo. p=probability based on 2-tailed binomial sign test of the difference between A>P and P>A or the difference between S>P and P>S. 12 swimmers participated in both swimming experiments; there were 18 different swimmers altogether. The swimmers of experiment 1 received a different dosage of secobarbital from that given the remaining subjects and therefore are not included in the total figures for the secobarbital-placebo comparisons.

[2] No data collected.

[3] No combined analysis performed.

RESULTS

The results are given in two parts. The first presents the performance evaluations reported by the athletes on amphetamine and secobarbital days in comparison with those reported on placebo days. The second presents results obtained with the 81-item check list and deals with the effects of amphetamine and secobarbital, in comparison with placebo, on subjective responses concerning mood and physical states. In examining the results reported in both sections it should be borne in mind that all groups of athletes actually performed better after taking amphetamine than after taking placebo, and that the performance of the swimmers was significantly impaired by 100 mg. of secobarbital, while the performance of runners and weight-throwers, considered as groups, was neither improved nor impaired, significantly, by 50 mg. of secobarbital.

PERFORMANCE EVALUATION OF ATHLETES

Amphetamine and Two "General Questions."—Table 2 deals with the two "general questions" and reports comparisons for each experiment considered separately and for all experiments combined. The data reported in table 2 for the swimmers of experiment 1 are based on four different experimental conditions combined: swimming alone when rested, alone when fatigued, in groups of three when rested, and in groups when fatigued. Table 3 gives results concerning responses to the two "general questions," with a breakdown of the four experimental conditions. When the subjects from all experiments were combined into a single group, it was found that 33 subjects (59%) reported receiving more help on amphetamine than on placebo days, 19 subjects (34%) reported no difference, and 4 subjects (7%) reported receiving more help on placebo than on amphetamine days; 28 subjects (50%) reported amphetamine would be better than placebo for competition, 24 subjects (43%) reported no difference, and 4 subjects (7%) reported placebo would be better than amphetamine for competition. Concerning both questions the number of subjects favoring amphetamine was significantly greater ($p<0.01$) than the number favoring placebo. The actual fact was that 77% of the subjects performed better after taking amphetamine than after placebo, and 23% performed worse.

Amphetamine and the "Detail Questions."—Table 4 presents the amphetamine placebo comparisons based on the "detail questions" concerning performance. Eight "detail questions" showed significant differences in the answers of the 25 runners to the questionnaire on amphetamine and on placebo days. The runners reported that they felt more "revved up" before the race, their legs felt stronger, their running felt faster and easier, they tired later", their bodies responded better to their will, their running was more smooth and rhythmic, and their effort was less "all-out" on amphetamine than on placebo days. All of these items except the last definitely indicated that the subjects reported better effects on ampretamine than on placebo days (table 4).

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The responses of the 13 weight-throwers yielded nine significant differences between amphetamine and placebo, all nine of which were in the direction of better performance on amphetamine than on placebo days (table 4). The weight-throwers reported better coordination, easier throwing, greater smoothness of motion, greater strength, greater endurance, throwing more "all-out," better balance and footwork, feet down more solidly after turns, and more snap and explosion at the release on amphetamine than on placebo days.

The reports of the 15 swimmers of experiment 6 yielded four significant differences between amphetamine and placebo, all in the direction of better performance on amphetamine days. They reported that they were more "revved up" before the race, swam faster, felt looser, and made their turns better on amphetamines than on placebo days. The effects shown by the 15 swimmers of experiment 1 were much less definite than those shown by the other groups and were not internally consistent (table 4).

Secobarbital and the Two "General Questions."—Thirty-eight subjects (runners and weight-throwers) received 50 mg. of secobarbital. Table 2 shows that 12 of these 38 subjects (32%) reported receiving more help on secobarbital than on placebo days, 23 subjects (60%) reported no difference, and 3 subjects (8%) reported more help on placebo than on secobarbital days; 15 subjects (39%) reported that secobarital would be better than placebo for competition, 19 subjects (50%) reported no difference, and 4 subjects (11%) reported placebo would be better than secobarbital for competition. Concerning both "general questions," the number of subjects favoring secobarbital was significantly greater ($p=0.05$) than the number favoring placebo. The actual fact was that 53% of the subjects performed better on secobarbital days than on placebo days, and 47% performed worse.

Table 3 shows that the 15 swimmers in experiment 1 who were given the 100-mg. dose of secobarbital did not yield significant secobarbital-placebo differences with respect to the two "general questions" under any of the four experimental conditions, although there was a tendency for the subjects to favor secobarbital when swimming alone and a tendency to favor placebo when swimming in groups. In actuality 93% of the subjects were impaired under the group-rested condition, 93% under the group-fatigued, 87% under the alone-rested, and 67% under the alone-fatigued condition.

Secobarbital and the "Detail Questions."—Although the runners and weight-throwers attributed more advantageous effects to 50 mg. of secobarbital than to placebo when asked the two "general questions," their responses to the "detail questions" on the performance-evaluation questionnaire failed to indicate any significant differences between secobarbital and placebo (table 5). This is in contrast to the many significant amphetamine-placebo differences found with the "detail questions" (table 4).

Table 5 shows that the answers to the "detail questions" given by the 15 swimmers who took the 100-mg. dose of secobarbital indicated that, when swimming alone, they definitely evaluated the effects of that medicament favorably; when swimming in groups, there was a tendency to attribute favorable effects to the drug, but only one comparison was statistically significant. The attribution of favorable effects to 100 mg. of secobarbital was in conflict with the fact, just mentioned, that secobarbital impaired the performance of the subjects under all four experimental conditions.

MOOD AND PHYSICAL STATES

Reported Effects of Amphetamine.—The results of the comparisons between the way the subjects checked the 81-item check list on amphetamine days and the way they checked it on placebo days are presented in table 6. The left-hand side of the table deals with response obtained 10 to 30 minutes before beginning the performance (from one and one-half to two and one-half hours after administration) and the right-hand side deals with responses obtained 10 to 30 minutes after completing the performance (from two and one-half to three and one-half hours after administration).

In addition to the data reported in tables 6 and 7 and in the figure, data were also collected concerning mood and physical states before each medicament was administered. This was done to determine whether chance sampling factors might be contributing bias to the drug comparisons. A bias of this sort was found in experiment 1 and will be discussed later.

TABLE 3.—SUBJECTIVE EVALUATIONS OF EFFECTS OF AMPHETAMINE, PLACEBO, AND SECOBARBITAL REPORTED BY 15 SWIMMERS UNDER 4 EXPERIMENTAL CONDITIONS

	A%P	A=P	P%A	p	S%P	S=P	P%S	p
Do you think the medication you had today helped or hurt your performance? If so, how much and in what ways:								
Rested, alone	9	4	2	0.10	8	5	2	NS
Rested, groups	6	5	4	NS	5	3	7	NS
Fatigued, alone	3	10	2	NS	7	6	2	NS
Fatigued, groups	3	8	4	NS	2	6	7	NS
Do you think the medication you had today would help or hurt you in actual competition? If so, how much and in what ways:								
Rested, alone	6	9	0	0.05	6	7	2	NS
Rested, groups	5	5	5	NS	4	4	7	NS
Fatigued, alone	3	10	2	NS	5	7	3	NS
Fatigued, groups	3	8	4	NS	3	5	7	NS

TABLE 4.—COMPARATIVE EFFECTS OF AMPHETAMINE AND PLACEBO ON SUBJECTIVE EVALUATIONS OF PERFORMANCE

Group of athletes and questionnaire item[1]	A>P[2]	A=P	P>A	p
Runners (n=25):				
"Revved up" before race	17	6	2	.01
Legs felt strong	19	1	5	.01
Running felt fast	17	4	4	.01
Running seemed easy	17	4	4	.01
Good endurance	18	2	5	.05
Body responsive to will	12	9	4	.10
Running with smoothness and rhythm	14	6	5	.10
Effort "all-out"	2	14	9	.10
Weight-throwers (n=13):				
Good coordination in throwing	11	2	0	.01
Throwing with ease	12	0	1	.01
Smoothness of motion	11	0	2	.05
Good strength	11	0	2	.05
Good endurance	9	3	1	.05
Throwing "all-out"	7	6	0	.05
Good balance and footwork	9	2	2	.10
Feet down solidly after turns[3]	7	1	1	.10
Release with explosion or snap	9	2	2	.10
Swimmers (n=15), experiment 6:				
"Revved up" before race	11	3	1	.01
Swimming felt fast	12	0	3	.05
Swimming felt loose	9	5	1	.05
Made turns well	7	7	1	.10
Swimmers (n=15), experiment 1:				
1st swim, swimming alone:				
"Revved up" before race	9	4	2	.10
1st swim, swimming in groups:				
No significant effects				
2d swim, swimming alone:				
Recovery was fast	0	7	8	.01
2d swim, swimming in groups:				
Swimming felt easy	2	4	9	.10
Start was fast	1	6	8	.05

[1] Only those items yielding a significant difference between A>P and P>A are listed in this table.

[2] On all items the number of athletes who reported more favorable effects on amphetamine than on placebo days is listed under A>P.

[3] This question did not apply to the 4 shotputters.

TABLE 5.—COMPARATIVE EFFECTS OF SECOBARBITAL AND PLACEBO ON SUBJECTIVE EVALUATIONS OF PERFORMANCE[1]

Groups of athletes and questionnaire item	Swimming alone				Swimming in groups			
	S>P	S=P	P>S	p	S>P	S=P	P>S	p
Swimmers (n=15), experiment 1:								
1st swim, rested:								
Stroke felt good	11	4	0	0.01	9	3	3	NS
Swimming felt loose	10	5	0	.01	5	6	4	NS
Start seemed fast	8	7	0	.01	3	6	6	NS
Recovery was fast	5	5	5	NS	10	4	1	0.05
Swimming felt fast	10	3	2	.05	9	1	5	NS
Swimming felt smooth	10	3	2	.05	7	4	4	NS
Swimming seemed easy	9	5	1	.05	10	1	4	NS
Made turns well	8	6	1	.05	6	4	5	NS
Did not have to drive self hard toward finish	9	4	2	.10	8	4	3	NS
2d swim, fatigued:								
Swimming felt smooth	8	7	0	.01	6	3	6	NS
Start seemed fast	9	5	1	.05	4	8	3	NS
Made turns well	9	5	1	.05	5	6	4	NS
Swimming felt fast	11	1	3	.10	6	6	3	NS
Runners (n=25)	no significant effects							
Weight-throwers (n=13)	no significant effects							
Swimmers (n=15), experiment 6	secobarbital not given							

[1] The dose of secobarbital sodium given to the swimmers of experiment 1 was 100 mg. per 70 kg. of body weight. That given to the runners and weight-throwers was 50 mg. per 70 kg. of body weight.

The 729 comparisons in table 6 do not readily point up the major conclusions suggested by the data. The figure presents, in a manner facilitating quick comprehension, the effects of amphetamine on mood and physical states in experiments 2 through 6, combined. Twelve of the subjects in experiment 6 had also participated in experiment 1. To prevent those 12 subjects from contributing twice to the total comparisons (based on all subjects combined to form a single group), the decision was made to exclude one of these two experiments from the total comparisons. The mood and physical effects found in experiment 6 were like those found in experiments 2–5, but those found in experiment 1 were different. Possible reasons for this will be suggested. Because the results in experiment 6 received confirmation from those in experiments 2–5, whereas those of experiment 1 did not, the decision was made to include experiment 6 rather than experiment 1 in the overall total.

The figure summarizes the results based on the data of experiments 2 through 6, combined, and shows that the four major subjective states produced by amphetamine both before and after performance were (1) mental and physical activation, (2) elation, (3) boldness, and (4) friendliness. The "clustering" of items in the figure is based on what we believe to be psychological and semantic similarities. The significance levels are reported for each item separately, for the convenience of the reader who does not agree with this grouping.

The increased feeling of mental and physical activation was the most definite amphetamine effect revealed by responses to the 81-item check list, both before and after performance. At one or both points there was more checking of active, vigorous, and energetic on amphetamine than on placebo days; less checking of sluggish, weak, drowsy, and tired; more checking of alert and clearheaded; less checking of mentally slow; more checking of efficient, ambitious, industrious, and effective; and more checking of excited, on edge, anticipative, tense, jittery, and restless on amphetamine than on placebo days. The second most definite amphetamine effect revealed by responses to the check list was increased elation. There was more checking of elated, exhilarated, happy, cheerful, and overjoyed and less checking of depressed and moody on amphetamine days than on placebo days. A third positive effect was increased boldness. The subjects checked bold, boastful, cocky, self-confident, playful, and domineering more, and insecure less, on amphetamine than on placebo days. The fourth definite effect was greater friendliness, as indicated by more checking of friendly, talkative, good-natured, obliging, and trustful and less checking of grouchy, unsociable, and sarcastic. In addition to the four major effects just mentioned, there was also greater checking of impulsive and drunk on amphetamine than on placebo days, both before and after performance; and there was greater checking of satisfied after performance on amphetamine than on placebo days.

Reported Effects of Secobarbital on Mood and Physical States.—The 100-mg. dose of secobarbital was used in the first experiment only. The subjects checked the 81-item list 30 minutes after taking secobarbital (25 minutes before beginning the first swim) and again about 80 minutes after administration (after completing the second swim). The major effect at both time points was one of intoxication, as indicated by greater checking of dopey, light-headed, and drunk after secobarbital than after placebo (table 7). At the 30-minute point there was also more checking of dizzy and muddled and less checking of clear-headed on secobarbital than on placebo days. The remaining effects produced by 100 mg. of secobarbital were less definite than the intoxication, and those present before performance differed from those present afterward (table 7). Before performance there was a "deactivation" effect, as indicated by less checking of industrious and active on secobarbital than on placebo days; there was also less checking of good-natured, cautious, and hungry. After performance, there was an increase in elation, as indicated by more checking of cheerful, elated, and happy on secobarbital than on placebo days; there was also more checking of nonchalant and less checking of insecure, less checking of sarcastic, less checking of self-controlled, and more checking of industrious on secobarbital than on placebo days.

The 50-mg. dose of secobarbital given to runners and weight-throwers produced less definite effects on mood and physical states than did the 100 mg. dose given to swimmers (table 7). Before the performance there was more elation on secobarbital than on placebo days, as indicated by more checking of elated, overjoyed, and exhilarated; more mental and physical activation, surprisingly, as indicated by more checking of vigorous, efficient, and ambitious, and less checking of weak; and, in addition, a suggestion of intoxication, as indicated by more checking of light-headed on secobarbital than on placebo days. The effects of 50 mg. of secobarbital, found after the performance, did not fall into coherent groups and tended to differ from experiment to experiment (table 7).

	Before performance (N · 44)		After performance (N · 53)	
	Less	More	Less	More
Activation (physical and mental).	xx Weak	xxx Active	xxx Sluggish	xxx Active.
	xx Tired	xxx Vigorous	xx Weak	xxx Vigorous.
		xxx Energetic	xx Drowsy	xxx Energetic.
		xx Alert	xxx Mentally slow	xxx Alert.
				xx Clearheaded.
		xxx Efficient		xxx Efficient.
		xxx Ambitious		xxx Ambitious.
		xx Industrious		xxx Industrious.
		x Effective		xxx Effective.
	xxx Bored	xxx Tense	x Bored	xxx Excited.
	xx Indifferent	xx Excited	x Indifferent	xxx On edge.
				xxx Anticipative.
				x Tense.
				x Jittery.
				x Restless.
Elation	xxx Moody	xxx Elated	xx Depressed	xxx Elated.
		xxx Exhilarated	xx Moody	xxx Exhilarated.
		xxx Overjoyed		xxx Happy.
		x Happy		xxx Cheerful.
		x Cheerful		xx Overjoyed.
Boldness		xxx Bold	xx Insecure	xxx Bold.
		xxx Boastful		xxx Boastful.
		xxx Cocky		xxx Cocky.
		xx Self-confident		xxx Self-confident.
		xx Domineering		xxx Playful.
				xx Domineering.
Friendliness	xx Grouchy	xxx Obliging	xxx Grouchy	xxx Friendly.
		xx Trustful	xxx Unsociable	xxx Talkative.
			xxx Sarcastic	xx Good natured.
		xx Impulsive		xx Impulsive.
		xx Drunk		xx Drunk.
				xxx Satisfied.

Note: Effects of amphetamine on mood and physical states; xxx: significant at 0.01 level, by 2-tailed binomial sign test; xx: significant at 0.05 level; x: significant at 0.01 level.

TABLE 6.—SUBJECTIVE EVALUATION OF EFFECTS OF AMPHETAMINE—TABULATION OF RESPONSES[1]

Item	Amphetamine versus placebo, per experiment number (before performance)															
	1 (n=15)				2 and 3 (n=16)				5 (n=13)				6 (n=15)			
	+	=	−	p	+	=	−	p	+	=	−	p	+	=	−	p
Alert	3	7	5		6	6	4		6	4	3		8	7	0	0.01
Unsociable	1	11	3		3	9	4		3	9	1		3	9	3	
Hungry	3	4	8		5	7	4		2	7	4		4	7	4	
Dreamy	4	9	2		5	9	2		2	8	3		3	10	2	
Talkative	8	3	4		7	4	5		4	6	3		5	9	1	
Chilly	4	9	2		0	8	8	0.01	2	10	1		2	11	2	
Bold	5	7	3		5	11	0	.10	7	6	0	0.05	2	12	1	
Sluggish	3	5	7		3	7	6		2	3	8		4	7	4	
Friendly	5	7	3		3	9	4		3	6	4		9	5	1	.05
Thirsty	5	3	7		2	11	3		5	5	3		4	7	4	
On edge	6	5	4		2	8	6		5	7	1		5	6	4	
Vigorous	5	7	3		10	6	0	.01	10	2	1	.05	9	5	1	.05
Pensive	5	5	5		2	10	4		1	8	4		2	10	3	
Drunk	1	13	1		0	15	1		6	7	0	.05	3	12	0	
Nonchalant	3	10	2		6	4	6		1	10	2		2	8	5	
Efficient	5	7	3		8	7	1	.05	5	7	1		7	7	1	.10
Skeptical	3	10	2		2	8	6		2	7	4		2	9	4	
Self-confident	8	5	2		6	7	3		7	4	2		7	5	3	
Erotic	3	9	3		5	7	4		2	7	4		3	11	1	
Good-natured	4	5	6		5	7	4		5	5	3		7	4	4	
Mentally cloudy	2	8	5		5	7	4		1	9	3		5	5	5	
Cheerful	8	4	3		5	9	2		5	6	2		7	5	3	
Impatient	7	5	3		6	7	3		5	6	2		4	5	6	
Energetic	6	7	2		7	8	1	.10	8	3	2		7	6	2	
Timid	0	15	0		2	11	3		1	9	3		1	13	1	
Anticipative	5	6	4		5	8	3		4	5	4		9	4	2	.10
Angry	2	10	3		2	12	2		3	8	2		1	11	3	
Playful	6	7	2		8	4	4		4	6	3		5	9	1	
Insecure	5	7	3		2	11	3		3	8	2		4	10	1	
Bored	1	7	7	0.10	1	8	7	.10	1	10	2		1	8	6	
Dizzy	4	10	1		4	10	2		4	7	2		3	9	3	
Indifferent	2	6	7		3	5	8		2	7	4		1	8	6	
Shaky	3	11	1		0	9	7	.05	5	6	2		2	11	2	
Domineering	4	10	1		6	8	2		5	8	0	.10	1	13	1	
Active	5	6	4		10	4	2	.05	8	3	2		7	5	3	
Blurry-eyed	2	10	3		1	10	5		3	8	2		2	10	3	
Peaceful	4	5	6		9	4	3		3	4	6		6	7	2	
Industrious	5	6	4		8	5	3		5	5	3		7	7	1	.10

Depressed	7	2	6		1	11	4		3	6	4		5	2	8	
Effective	6	5	4		6	7	3		6	5	2		7	5	3	
Cautious	0	7	8	.01	4	7	5		1	7	5		2	8	5	
Drowsy	2	6	7		6	5	5		2	8	3		3	4	8	
Sarcastic	4	5	6		4	8	4		1	9	3		3	10	2	
Ambitious	4	8	3		11	5	0	.01	9	3	1	.05	5	8	2	
Inhibited	3	10	2		2	10	4		4	8	1		3	10	2	
Changeable	6	6	3		3	8	5		3	7	3		4	8	3	
Tense	4	6	5		5	8	3		7	5	1	.10	5	4	6	
Jittery	2	9	4		1	12	3		5	7	1		2	7	6	
Quiet	0	8	7	.05	6	6	4		1	6	6		3	8	4	
Unworried	5	3	7		4	5	7		3	5	5		6	4	5	
Numb	3	11	1		3	9	4		3	9	1		2	10	3	
Sad	4	9	2		0	13	3		2	10	1		4	7	4	
Restless	5	5	5		5	4	7		8	4	1	.05	6	4	5	
Trustful	3	10	2		5	9	2		4	9	0		4	10	1	
Dopey	3	6	6		3	9	4		4	6	3		4	10	1	
Boastful	3	12	0		4	11	1		6	6	1		4	11	0	
Happy	8	5	2		6	7	3		6	4	3		7	5	3	
Relaxed	3	8	4		6	7	3		1	7	5		4	8	3	
Headache	3	10	2		4	9	3		1	8	4		2	9	4	
Cocky	2	13	0		6	9	1		6	6	1		4	10	1	
Blue	4	7	4		1	12	3		2	8	3		1	9	5	
Weak	3	4	8		2	5	9	.10	3	3	7		4	4	7	
Excited	3	7	5		6	6	4		6	5	2		6	8	1	
Moody	3	8	4		0	8	8	.01	3	7	3		1	6	8	.05
Satisfied	5	5	5		4	6	6		3	5	5		0	7	2	
Impulsive	7	5	3		4	10	2		5	7	1		7	7	1	.10
Tired	2	5	8		3	6	7		3	4	6		3	4	8	
Detached	6	6	3		3	10	3		3	9	1		3	8	4	
Defiant	5	8	2		3	10	3		3	9	1		2	8	5	
Self-conscious	4	8	3		2	9	5		3	8	2		2	10	3	
Lightheaded	6	7	2		4	9	3		6	6	1		5	7	3	
Grouchy	3	8	4		2	10	4		2	8	3		0	8	7	.05
Elated	6	8	1		6	10	0	.05	5	8	0	.10	8	7	0	.01
Clearheaded	7	5	3		7	7	2		3	7	3		8	6	1	.05
Obliging	5	5	5		6	10	0	.05	5	6	2		4	10	1	
Overjoyed	3	11	1		6	9	1		6	7	0	.05	2	13	0	
Mentally slow	2	9	4		1	10	5		2	7	4		4	8	3	
Self-controlled	4	6	5		4	9	3		4	6	3		4	9	2	
Frustrated	6	7	2		4	10	2		2	8	3		2	5	8	
Muddled	6	6	3		3	9	4		5	6	2		1	10	4	
Exhilarated	5	8	2		7	8	1	.10	7	5	1	.10	3	12	0	

TABLE 6.—SUBJECTIVE EVALUATION OF EFFECTS OF AMPHETAMINE—TABULATION OF RESPONSES [1]

Item	Amphetamine versus Placebo, per experiment number (after performance)																			
	1 (n=15)				2 and 3 (n=16)				[2]4 (n=9)				5 (n=13)				6 (n=15)			
	+	=	−	p	+	=	−	p	+	=	−	p	+	=	−	p	+	=	−	p
Alert	4	5	6		10	5	1	.05	3	5	1		9	4	0	.01	10	2	3	.10
Unsociable	3	12	0		1	10	5		1	6	2		0	7	6	.05	1	11	3	
Hungry	1	7	7	.10	3	9	4		0	4	5	.10	2	7	4		7	6	2	
Dreamy	2	12	1		4	7	5		1	5	3		0	10	3		6	8	1	
Talkative	3	7	5		5	8	3		5	3	1		9	4	0	.01	6	5	4	
Chilly	2	11	2		2	10	4		4	2	8		2	9	2		4	9	2	
Bold	2	10	3		7	8	1	.10	3	6	0		6	6	1		4	10	1	
Sluggish	5	6	4		3	7	6		1	5	3		0	4	9	.01	4	1	10	
Friendly	2	8	5		7	8	1	.10	4	2	3		9	3	1	.05	5	9	1	
Thirsty	3	5	7		2	7	7		5	2	2		6	5	2		5	6	4	
On edge	2	8	5		4	9	3		3	6	0		8	5	0	.01	5	7	3	
Vigorous	2	7	6		6	8	2		8	0	1	.05	10	3	0	.01	5	7	3	
Pensive	2	10	3		5	9	2		3	5	1		0	9	4		2	12	1	
Drunk	1	13	1		2	13	1		1	8	0		4	9	0		2	13	0	
Nonchalant	3	8	4		4	6	6		2	4	3		0	8	5	.10	3	10	2	
Efficient	2	9	4		6	9	1		3	3	3		7	5	1	.10	6	7	2	
Skeptical	1	8	6		3	13	0		2	5	2		1	7	5		2	9	4	
Self-confident	3	5	7		6	9	1		5	1	3		8	3	2		8	6	1	.05
Erotic	3	9	3		3	9	4		1	6	2		1	8	4		0	14	1	
Good-natured	6	6	3		6	7	3		3	3	3		7	6	0	.05	7	5	3	
Mentally cloudy	5	5	5		3	10	3		1	6	2		2	8	3		2	4	9	.10
Cheerful	4	6	5		6	8	2		5	4	0	.10	8	5	0	.01	7	6	2	
Impatient	3	6	6		6	9	1		4	3	2		4	6	3		3	7	5	
Energetic	4	6	5		7	5	4		6	0	3		12	1	0	.01	7	7	1	.10
Timid	3	10	2		2	10	4		0	9	0		1	8	4		1	12	2	
Anticipative	2	9	4		9	6	1	.05	4	4	1		3	8	2		5	8	2	
Angry	2	9	4		2	13	1		2	6	1		2	8	3		2	6	7	
Playful	1	12	2		6	9	1		5	3	1		7	5	1	.10	6	6	3	
Insecure	3	8	4		2	10	4		0	5	4		1	10	2		1	9	5	
Bored	0	9	6	.05	3	10	3		1	6	2		0	9	4		1	10	4	
Dizzy	7	7	1	.10	2	8	6		1	7	1		2	9	2		5	6	4	
Indifferent	4	6	5		3	9	4		2	3	4		1	5	7	.10	2	9	4	
Shaky	5	8	2		3	5	8		1	7	1		6	7	0	.05	4	7	4	
Domineering	2	10	3		4	11	1		4	5	0		3	10	0		1	12	2	
Active	3	6	6		8	7	1	.05	7	2	0	.05	11	1	1	.01	8	5	2	
Blurry-eyed	4	8	3		3	8	5		3	6	0		2	8	3		5	9	1	
Peaceful	2	4	9	.10	4	8	4		3	4	2		6	4	3		4	6	5	
Industrious	3	6	6		6	6	4		5	2	2		8	3	2		6	7	2	
Depressed	3	4	8		4	8	4		1	5	3		1	4	8	.05	2	5	8	
Effective	1	9	5		6	9	1		6	2	1		10	3	0	.01	7	7	1	.10

Cautious	3	9	3	--------	4	8	4	--------	1	5	3	--------	1	10	2	--------	2	10	3	--------
Drowsy	3	4	8	--------	1	8	7	.10	1	6	2	--------	1	6	6	--------	5	4	6	--------
Sarcastic	2	7	6	--------	1	9	6	--------	0	7	2	--------	1	9	3	--------	2	7	6	--------
Ambitious	4	3	8	--------	6	9	1	--------	7	0	2	--------	9	2	2	.10	6	8	1	--------
Inhibited	3	10	2	--------	5	9	2	--------	1	6	2	--------	4	6	3	--------	0	12	3	--------
Changeable	5	7	3	--------	3	6	7	--------	3	6	0	--------	1	8	4	--------	4	9	2	--------
Tense	7	4	4	--------	4	9	3	--------	1	7	1	--------	6	6	1	--------	5	7	3	--------
Jittery	6	4	5	--------	2	10	4	--------	1	7	1	--------	7	6	0	.05	6	8	1	--------
Quiet	6	5	4	--------	6	7	3	--------	1	2	6	--------	2	4	7	--------	3	7	5	--------
Unworried	1	7	7	.10	4	7	5	--------	3	4	2	--------	5	7	1	--------	6	5	4	--------
Numb	7	4	4	--------	5	6	5	--------	2	7	0	--------	2	9	2	--------	7	3	5	--------
Sad	1	11	3	--------	3	9	4	--------	1	7	1	--------	0	9	4	--------	2	9	4	--------
Restless	1	7	7	.10	6	7	3	--------	5	4	0	.10	7	6	0	.05	3	5	7	--------
Trustful	1	11	3	--------	4	10	2	--------	3	4	2	--------	2	9	2	--------	3	11	1	--------
Dopey	5	8	2	--------	1	10	5	--------	1	7	1	--------	2	9	2	--------	5	8	2	--------
Boastful	2	11	2	--------	5	9	2	--------	4	5	0	--------	5	8	0	.10	3	11	1	--------
Happy	4	7	4	--------	6	9	1	--------	6	2	1	--------	8	3	2	--------	9	4	2	.10
Relaxed	2	6	7	--------	8	5	3	--------	4	1	4	--------	4	3	6	--------	7	3	5	--------
Headache	9	4	2	.10	1	11	4	--------	1	7	1	--------	0	10	3	--------	5	5	5	--------
Cocky	1	13	1	--------	5	10	1	--------	4	5	0	--------	4	8	1	--------	2	12	1	--------
Blue	4	6	5	--------	4	9	3	--------	1	5	3	--------	0	8	5	.10	2	10	3	--------
Weak	7	5	3	--------	3	5	8	--------	2	3	4	--------	3	2	8	--------	4	4	7	--------
Excited	3	8	4	--------	4	11	1	--------	5	4	0	.10	7	6	0	.05	5	9	1	--------
Moody	3	6	6	--------	1	7	8	.05	1	7	1	--------	0	7	6	.05	4	9	2	--------
Satisfied	5	5	5	--------	6	6	4	--------	7	1	1	.10	9	2	2	.10	9	2	4	--------
Impulsive	1	11	3	--------	2	12	2	--------	2	7	0	--------	5	7	1	--------	7	6	2	--------
Tired	7	4	4	--------	4	5	7	--------	2	2	5	--------	2	3	8	--------	5	4	6	--------
Detached	4	4	7	--------	2	12	2	--------	1	7	1	--------	3	6	4	--------	3	6	6	--------
Definat	1	6	8	.05	3	9	4	--------	3	5	1	--------	3	8	2	--------	4	5	6	--------
Self-conscious	2	10	3	--------	4	10	2	--------	1	5	3	--------	0	10	3	--------	1	9	5	--------
Lightheaded	5	7	3	--------	1	11	4	--------	3	5	1	--------	5	7	1	--------	4	8	3	--------
Grouchy	5	5	5	--------	1	9	6	--------	1	6	2	--------	0	7	6	.05	2	7	6	--------
Elated	2	10	3	--------	4	11	1	--------	6	2	1	--------	6	5	2	--------	4	9	2	--------
Clearheaded	3	6	6	--------	7	7	2	--------	2	5	2	--------	7	6	0	.05	7	5	3	--------
Obliging	6	4	5	--------	5	8	3	--------	2	5	2	--------	4	7	2	--------	5	9	1	--------
Overjoyed	4	9	2	--------	3	12	1	--------	4	5	0	--------	4	9	0	--------	0	14	1	--------
Mentally slow	5	5	5	--------	3	8	5	--------	0	6	3	--------	0	6	7	.05	3	3	9	--------
Self-controlled	3	7	5	--------	4	10	2	--------	3	4	2	--------	3	9	1	--------	5	8	2	--------
Frustrated	8	5	2	--------	4	8	4	--------	3	4	2	--------	1	8	4	--------	3	8	4	--------
Muddled	5	8	2	--------	3	10	3	--------	4	5	0	--------	1	8	4	--------	2	7	6	--------
Exhilarated	1	13	1	--------	4	11	1	--------	5	3	1	--------	6	7	0	.05	4	10	1	--------

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[1] The number of subjects checking a given item more on amphetamine days than on placebo days is listed in the + column. The = column reports the number of subjects checking items equally under the 2 drugs and the — column lists the number of subjects checking items more on placebo than on amphetamine days. p. indicates the 2-tailed probability value based on the binomial sign test evaluation of the difference between the number of subjects listed under the + column and the number listed under the — column. All comparisons failing to reach the 0.10 level of significance are left blank.

[2] The subjects of experiment 4 did not complete the check list before performance.

Note: See table 1 for a tabulation of methodological factors in the 6 experiments.

TABLE 7.—SUBJECTIVE EVALUATION OF EFFECTS OF SECOBARBITAL—TABULATION OF RESPONSES [1]

Item	Secobarbital versus placebo, per experiment number (before performance)															
	1 (n=15)				2 and 3 (n=16)				5 (n=13)				2, 3, 5 (n=29)			
	+	=	−	p	+	=	−	p	+	=	−	p	+	=	−	p
Hungry	2	3	10	0.05	4	9	3		5	4	4		9	13	7	
Thirsty	3	6	6		8	5	3		4	4	5		12	9	8	
On edge	6	4	5		3	10	3		3	6	4		6	16	7	
Vigorous	3	3	9		8	7	1	0.05	5	5	3		13	12	4	0.05
Pensive	4	7	4		4	11	1		1	9	3		5	20	4	
Drunk	7	7	1	.10	2	12	2		2	11	0		4	23	2	
Nonchalant	4	10	1		5	6	5		4	8	1		9	14	6	
Efficient	5	3	7		7	8	1	.10	5	7	1		12	15	2	.05
Skeptical	6	6	3		4	9	3		2	8	3		6	17	6	
Good-natured	1	7	7	.10	3	9	4		2	9	2		5	18	6	
Cheerful	3	5	7		5	9	2		3	8	2		8	17	4	
Energetic	4	7	4		6	9	1		3	4	6		9	13	7	
Anticipative	3	9	3		5	7	4		4	5	4		9	12	8	
Insecure	6	6	3		3	11	2		2	9	2		5	20	4	
Dizzy	9	5	1	.05	5	8	3		4	8	1		9	16	4	
Active	1	7	7	.10	6	7	3		4	7	2		10	14	5	
Peaceful	4	5	6		6	8	2		4	5	4		10	13	6	
Industrious	1	6	8	.05	6	7	3		4	5	4		10	12	7	
Cautious	0	10	5	.10	4	8	4		2	7	4		6	15	8	
Drowsy	8	3	4		5	7	4		5	8	0	0.10	10	15	4	
Sarcastic	2	8	5		4	10	2		4	4	5		8	14	7	
Ambitious	2	7	6		5	10	1		6	5	2		11	15	3	.10
Clearheaded	1	6	8	.05	7	3	6		4	4	5		11	7	11	
Quiet	5	7	3		7	6	3		2	4	7		9	10	10	
Dopey	8	6	1	.05	6	8	2		1	12	0		7	20	2	
Happy	5	6	4		4	10	2		4	6	3		8	16	5	
Relaxed	6	4	5		6	5	5		3	6	4		9	11	9	
Weak	5	5	5		2	8	6		2	5	6		4	13	12	.10
Moody	8	3	4		1	8	7	.10	3	8	2		4	16	9	
Lightheaded	9	4	2	.10	6	7	3		6	7	0	.05	12	14	3	.05
Elated	4	7	4		7	9	0	.05	5	8	0	.10	12	17	0	.01
Obliging	5	5	5		5	11	0	.10	6	3	4		11	14	4	
Overjoyed	2	11	2		4	12	0		4	9	0		8	21	0	.01
Self-controlled	2	7	6		4	8	4		2	9	2		6	17	6	
Muddled	7	7	1	.10	5	10	1		2	8	3		7	18	4	
Exhilarated	4	8	3		6	8	2		4	8	1		10	16	3	.10

Secobarbital versus placebo, per experiment number (after performance)

	1 (n=15)				2 and 3 (n=16)				4 (n=9)				5 (n=13)				2 to 5 (n=38)			
	+	=	−	p	+	=	−	p	+	=	−	p	+	=	−	p	+	=	−	
				p				p												
Hungry	2	6	7		4	7	5		2	6	1		2	5	6		8	18	12	
Thirsty	5	4	6		3	7	6		1	7	1		5	5	3		9	19	10	
On edge	3	6	6		5	8	3		3	6	0		4	9	0		12	23	3	0.05
Vigorous	8	4	3		7	7	2		2	5	2		3	8	2		12	20	6	
Pensive	3	8	4		7	7	2		2	7	0		2	10	1		11	24	3	.10
Drunk	7	8	0	0.05	2	13	1		0	9	0		2	11	0		4	33	1	
Nonchalant	7	7	1	.10	2	4	10	0.05	3	4	2		5	5	3		10	13	15	
Efficient	4	7	4		5	7	4		2	3	4		3	8	2		10	18	10	
Skeptical	2	7	6		6	9	1		2	5	2		2	11	0		10	25	3	.10
Good-natured	7	6	2		3	8	5		3	2	4		7	5	1	0.10	13	15	10	
Cheerful	9	5	1	.05	4	6	6		4	4	1		6	7	0	.05	14	17	7	
Engergetic	5	5	5		5	6	5		2	4	3		5	8	0	.10	12	18	8	
Anticipative	1	8	6		8	7	1	.05	2	7	0		4	7	2		14	21	3	.05
Insecure	0	9	6	.05	4	11	1		2	5	2		0	10	3		6	26	6	
Dizzy	10	1	4		3	7	6		1	8	0		4	9	0		8	24	6	
Active	3	9	3		7	5	4		3	3	3		3	7	3		13	15	10	
Peaceful	5	7	3		5	7	4		4	3	2		5	8	0	.10	14	18	6	
Industrious	8	6	1	.05	5	4	7		3	6	0		4	5	4		12	15	11	
Cautious	5	5	5		4	8	4		2	4	3		2	8	3		8	20	10	
Drowsy	8	4	3		4	6	6		1	7	1		6	1	6		11	14	13	
Sarcastic	1	6	8	.05	2	7	7		1	7	1		3	7	3		6	21	11	
Ambitious	1	9	5		6	8	2		3	3	3		3	6	4		12	17	9	
Clear-headed	2	6	7		5	7	4		3	6	0		5	4	4		13	17	8	
Quiet	2	8	5		12	1	3	.05	1	3	5		2	7	4		15	11	12	
Dopey	9	6	0	.01	2	9	5		2	7	0		3	10	0		7	26	5	
Happy	10	2	3	.10	3	7	6		4	2	3		5	7	1		12	16	10	
Relaxed	4	4	7		6	9	1		6	2	1		6	3	4		18	14	6	.05
Weak	2	5	8		3	5	8		3	4	2		4	4	5		10	13	15	
Moody	3	5	7		2	6	8		1	8	0		3	3	7		6	17	15	.10
Light-headed	10	5	0	.01	4	8	4		1	7	1		4	9	0		9	24	5	
Elated	5	10	0	.10	4	9	3		2	7	0		2	8	3		8	24	6	
Obliging	3	7	5		0	9	7	.05	3	3	3		4	7	2		7	19	12	
Overjoyed	2	12	1		2	10	4		2	7	0		1	12	0		5	29	4	
Self-controlled	1	6	8	.05	4	11	1		3	5	1		2	5	6		9	21	8	
Muddled	4	9	2		4	9	3		2	7	0		4	6	3		10	22	6	
Exhilarated	3	12	0		2	10	4		2	6	1		2	11	0		6	27	5	

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[1] The dosage of secobarbital in experiment 1 was 100 mg per 70 kg of body weight: that in the other experiments was 50 mg per 70 kg of body weight. The subjects of experiment 4 did not complete the check list before performance. See table 1 for other methodological differences among the various experiments. Only 36 of the 81 items are presented in this table, since the remaining 45 items did not yield significant differences in any comparison.

COMMENT

The data presented above, dealing with the drug effects reported by the athletes concerning performance, mood, and physical states, shed light on several specific questions which in some cases are not closely related to each other. In discussing the results, each of these questions will be treated separately.

Amphetamine Seen as an Aid to Performance.—Seventy-seven per cent of the subjects performed better after taking amphetamine (14 mg.) than after taking placebo. The results obtained with the two "general questions" (tables 2 and 3) indicate that the subjects, considered as a group, did attribute more favorable effects to amphetamine than to placebo, but that the number of subjects (59%) who reported being helped more by amphetamine than by placebo was smaller than the number who actually performed better on amphetamine than on placebo days. It is possible that some of the 19 subjects (34%) whose answers to the "general questions" indicated no difference between the amount of aid given by amphetamine and placebo, actually did notice an improvement on amphetamine days but did not believe it was due to the drug. The data in table 4 bear on this possibility. Examination of the "detail questions" showing the most definite amphetamine-placebo differences reveals that (with the exclusion of the swimmers of the first experiment, whose atypicality will be discussed) the percentage of subjects reporting improvement on amphetamine days, with respect to at least some (four to seven) detailed aspects of performance, was about the same as the percentage actually exhibiting improvement.

Amphetamine Seen as Aiding a Variety of Factors.—Since the runners, swimmers, and weight-throwers were not, for the most part, asked the same "detail questions" on their questionnaires, it is difficult to give summarizing statements about the effects reported by all athletes considered as a single group. An over-all examination of table 4 does suggest, however, that amphetamine might aid athletic performance by influencing a variety of factors. The runners and swimmers (the weight-throwers were not asked this question) reported feeling more "revved up," or stimulated, before performance on amphetamine than on placebo days; the runners and weight-throwers reported having more strength and endurance on amphetamine days; and all three types of athletes reported having better coordination and form on amphetamine than on placebo days.

Amphetamine and the Question of "All-out" Performance.—The results obtained with the "detail question" pertaining to whether the subjects gave an "all-out" performance were surprising. The weight-throwers, considered as a group, reported throwing more "all-out" on amphetamine than on placebo days, but the runners reported that their performances were less all-out on amphetamine days; neither group of swimmers reported a significant difference between amphetamine and placebo days with respect to this question. All three groups of athletes performed better on amphetamine than on placebo days, and yet only the weight-throwers reported giving more all-out performances on the amphetamine days. If the runners and swimmers did give more all-out performances on amphetamine than on placebo days, they did not appear to recognize it.

Secobarbital Mistakenly Seen as an Aid.—The responses to the "detail questions" made by the 38 runners and weight-throwers who were given 50 mg. of secobarbital did not yield any significant differences between secobarbital and placebo effects, but the answers to the "general questions" indicated that these 38 subjects, considered as a single group, did attribute more beneficial effects to secobarbital than to placebo. This was surprising, in view of the fact that secobarbital neither improved nor impaired the performance of this group of subjects to a significant degree. Even more surprising was the fact that the answers to the "detail questions" given by the 15 swimmers who took the 100-mg. dose of secobarbital indicated that they attributed highly beneficial effects to that medicament (when swimming alone), whereas the fact of the matter was that it produced a great impairment in performance. This latter finding indicates that the 100-mg. dose of secobarbital can, under certain circumstances, produce a marked distortion in judgment. In addition to the data presented above, other data providing a more precise and detailed analysis of this distortion were collected. A quantitative assessment of the amount of judgment distortion produced under various conditions by 100 mg. of secobarbital is presented, and the implications of these results are discussed, in a concurrently published paper.[4]

Possible Influences of Mood and Physical States on Performance.—The major effects of amphetamine on mood and physical states were increased physical and mental activation, elation, boldness, and friendliness. These effects, which were present both before and after performance, could reasonably be expected to favor good performance. This does not, of course, rule out the possibility that amphetamine aids performance by changing respiratory, cardiac, metabolic, or other physiological functions. Our data do not deal with these factors. In the third paragraph of this section, evidence was adduced to indicate that amphetamine might aid athletic performance by altering a variety of factors. The effects of amphetamine on mood and physical states give further support to that conclusion.

The major effects of 100 mg. of secobarbital on mood and physical states before performance were intoxication and "deactivation." These effects would seem definitely disadvantageous to performance. The major effects of 50 mg. of secobarbital before performance were mental and physical activation and elation. These effects are similar to some of those produced by 14 mg. of amphetamine and might be expected to contribute to an improvement in performance. Whether these effects did contribute to an improved performance but were counterbalanced by detrimental effects, or whether they actually did not influence performance, are questions which cannot be answered on the basis of the present data. All that can be said is that secobarbital (50 mg.) and amphetamine (14 mg.) were similar in certain of their effects on mood and physical states but that amphetamine significantly improved performance whereas secobarbital did not.

Differences in Results Obtained in the Various Experiments.—In general, the six experiments reported above were similar to each other with respect to the subjective effects produced by amphetamine and secobarbital. Two exceptions will be discussed. Table 6 indicates that, after performance, the weight-throwers of experiment 5 obtained 30 significant amphetamine-placebo differences on the check list dealing with mood and physical states, about four times as many as any other group of subjects. The weight-throwers obtained a greater improvement in performance from amphetamine than did the runners or swimmers (the weight-throwers improved from 3 to 4%, the runners improved about 1.5%, and the swimmers improved from about 0.6 to about 1.2%), and they were probably aware of this rather extensive improvement on amphetamine days because they were able to observe the distance of each throw. An awareness of the success of their immediately preceding performance might have contributed to their especially high degree of activation, elation, boldness, and friendliness after performing on amphetamine days.

The swimmers of experiment 1 were different from the remaining groups with respect to the effect of amphetamine on subjective responses pertaining to performance and with respect to subjective responses concerning mood and physical states. In spite of the fact that amphetamine significantly improved their performance, those 15 subjects did not evaluate it as having done so; they also did not report the effects on mood and physical states (increased activation, elation, boldness, and friendliness) which were reported by the other groups of subjects. The exact cause of this difference is not known; however, two factors which may be related to it will be mentioned. First, the subjects of that experiment were studied on consecutive days. It is possible that the drug comparisons were to some extent contaminated by "carry-over" effects. Second, chance sampling factors caused a bias in the amphetamine-placebo comparisons. The responses to the check list obtained each day before medicaments were taken indicated that the subjects, considered as a group, began their amphetamine sessions feeling less industrious, efficient, and clear-headed and more mentally cloudy than when they began their placebo sessions. They also felt more insecure, inhibited, skeptical, self-conscious, and pensive and less cheerful, good-natured, and self-controlled before taking amphetamine than before taking placebo. The comparison for "insecure" was significant at the 0.01 level with a two-tailed sign test, that for "cheerful" at 0.05, and those for "industrious" and "inhibited" at 0.10. The others just mentioned were at the 0.25 level of significance. Comparisons which reach the 0.25 level are not considered to be statistically significant in this report but are mentioned in the present context in an attempt to clarify the nature of the sampling bias.

Amphetamine and Antisocial Behavior.—Recently there has been considerable interest in the question of whether amphetamine produces "temporary alterations in personality" (changes in mood and behavioral predispositions) which might facilitate antisoical behavior. In a government report[5] the opinion was expressed that improper use of amphetamine is associated with problems of juvenile delinquency and crime. It as stated, "Investigation by authorities has determined that many lawbreakers have consumed 'thrill pills' to bolster their courage for commission of crimes." Viewed in this context, the fact that amphetamine is reported to be in widespread use by students, businessmen, and other noncriminal citizens becomes a matter of significance. The question arises whether amphetamine produces "temporary changes in personality" which might lead nondelinquent persons, such as athletes or students, to engage in antisocial behavior. The present study was not designed to answer that question, but the quantitative information concerning the mood effects produced in athletes by amphetamine is relevant.

In the present investigation, increased feelings of mental and physical activation, elation, boldness, and friendliness were the main effects of amphetamine on mood and physical states. Increased checking of drunk, impulsive, and satisfied was also found. The increase in effects classified as boldness and friendliness is pertinent to the issue of antisocial behavior; perhaps the increased checking of drunk and impulsive is also, since increases in these two effects may imply a reduction in self-control.

We cannot, of course, say that a person who reports feeling an increase in friendliness will always exhibit, simultaneously, an increase in friendly behavior or that one who reports an increase in unfriendly feelings will simultaneously exhibit an increase in antisocial behavior. It does seem reasonable, however, to assume that an increase in friendly feelings will increase the likelihood of friendly behavior on the average and, contrariwise, that an increase in antisocial feelings will increase the likelihood of antisocial behavior. It also seems reasonable to assume that in a group of cooperative subjects who are interested in the study conducted (such as the athletes of the present investigation appeared to be), reports concerning mood states would correspond to true feelings, in general. We must mention, however, that when drugs are given which might influence judgment (and in the present study secobarbital, 100 mg., was found to be such a drug) it is possible for behavior and reported feelings to be quite discrepant.

As shown in the figure, the athletes checked bold, boastful, cocky, self-confident, playful, and domineering more and insecure less on amphetamine than on placebo days. Those mood changes might, under certain circumstances, facilitate antisocial behavior, particularly the changes in feelings which account for the increased checking of cocky and domineering. However, the increased boldness was accompanied by greater friendliness, as indicated by more checking of friendly, talkative, good-natured, obliging, and trustful and less checking of grouchy, unsocial, and sarcastic. The psychological meaning and behavioral consequences of simultaneously increasing friendliness and boldness are not known. Furthermore, it is almost certain that such behavioral consequences would be strongly influenced by social and environmental circumstances. Additional work is needed to determine the frequency of the coexistence of friendliness and boldness, the circumstances in which it leads to antisocial behavior, the circumstances in which it leads to socially constructive behavior, and, in addition, the role of personality factors in such reactions. The data of the present investigation indicate that most nondelinquent persons who take amphetamine in a moderate dose, such as that used in the present study, and who do so in a situation in which social forces tend to inhibit rather than promote antisocial behavior, are likely to experience mood effects which contain both socially positive and socially negative elements.

SUMMARY

Fifty-seven athletes (runners, swimmers, and weight-throwers) who were in middle or late season condition were given amphetamine (14 mg.), secobarbital (100 mg. or 50 mg.), or placebo on different occasions. The medicaments were given on a body weight basis, the doses just mentioned being those given to a subject who weighed 70 kg. (154 lb.). The subjects were given each type of medicament, orally, several times (three on the average). The medicaments were given in a counter-balanced order which was unknown to the investigator collecting the data and unknown to the subjects. After taking each medicament the subject performed his regular athletic event and afterward evaluated his performance, on a questionnaire containing 15 to 20 questions. In addition, each subject gave information about his mood and physical states by responding to an 81-item check list once before taking each medicament and twice afterward. The 57 subjects were studied 781 times in the above manner. Comparisons between amphetamine and placebo and between secobarbital and placebo were made with respect to answers to questions about the performances and with respect to responses to the check list dealing with mood and physical states.

The subjective responses of the athletes indicated that 14 mg. or amphetamine sulfate might improve athletic performance by influencing a variety of factors:

the beneficial effects reported were increased stimulation (feeling "revved up") before the performance, improved coordination and form, increased strength and endurance, and increased mental and physical activation. Most athletes did not report that performances on amphetamine days were more "all-out" than those on placebo days. Amphetamine increased feelings of boldness, elation, and friendliness; these mood changes contained both socially positive and socially negative elements. The 100-mg. dose of secobarbital sodium produced intoxication, elation, "deactivation," and distortion in judgment. The 50-mg. dose produced elation and activation.

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APPENDIX 13

AMPHETAMINE, SECOBARBITAL, AND ATHLETIC PERFORMANCE

III. QUANTITATIVE EFFECTS ON JUDGMENT

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(J.A.M.A., Vol. 172, No. 15, April 9, 1960)

Numerous laboratory investigations have shown that barbiturates and other drugs alter performance on psychomotor and mental tests.[1] The present investigation provided a rarely available opportunity to study a complex mental function in a situation allowing quantitative precision and laboratory controls to be combined with "real life" conditions which avoided the artificiality of a laboratory experiment. By comparing an athlete's actual performance with his estimate of his performance, it was possible to examine a complex process of judgment in a situation in which the factors studied, performance and judgment, appeared to be matters of personal importance to the subject. An additional advantage was that each subject was a highly trained athlete in midseason form who was skilled in estimating his performance time.

The investigation reported here was designed, primarily, to determine whether amphetamine sulfate improved the performance of trained athletes and to determine the subjective effects of amphetamine on such athletes. Data pertaining to these two questions have been reported elsewhere.[2] The data reported in the present paper concern the effects of amphetamine and secobarbital on judgment.

METHOD

Fifteen members of a college swimming team swam twice each day on 12 consecutive days during the middle of their swimming season. Three of the men swam the 100-yd. butterfly, three the 100-yd. free style, three the 200-yd. breast stroke, three the 200-yd. free style, and three the 200-yd. backstroke. On six days each man swam alone ("solo" trials) and on six he swam in a group of three ("group" trials). When swimming in groups a subject competed with two other members of the team whose usual speeds, in comparison with his own, he knew. The second swim of each day began 15 minutes after the beginning of the first and so was performed under conditions of fatigue. All trials occurred during the late afternoon. Each swimmer was timed by two or more clocks (standard stop watches and an electric timer) on all trials.

Fifteen college swimmers, in midseason condition, swam 360 time trial after receiving 100 mg. of secobarbital, 14 mg. of amphetamine, or placebo on different occasions. After each trial a swimmer estimated his performance time and gave a detailed evaluation of his performance. Secobarbital significantly impaired performance, and amphetamine significantly improved it. The subjective data showed that secobarbital produced distortion in judgment; after taking secobarbital the swimmers thought their performances were unusually good, whereas in fact they were unusually bad. The effects of amphetamine on judgment were not conclusive.

Each subject performed six times under each of four swimming conditions: rested-solo, fatigued-solo, rested-group, and fatigued-group. He performed under each of these conditions twice after taking amphetamine, twice after taking secobarbital, and twice after taking placebo. The medication procedures will be described later.

After each performance the swimmer was asked to give a time-judgment for that trial. The actual performance times of the first (rested) and second (fatigued) swims were revealed to the subject after obtaining his time-judgment for the second swim. Two measures of judgment were derived from the relationship between performance time and the swimmer's time-judgment. The first, called judgment-error, is the unsigned, or absolute, difference between a subject's swimming time and his judgment of his swimming time. The second, called judgment-tendency, is the signed difference (algebraic sum) between swimming time and time-judgment and thus indicates whether a subject overvalued or undervalued his performance. A subject obtained a judgment-tendency score and a judgment-error score for each swim. A subject swam twice under each specific experimental condition (e.g., twice in groups, when fatigued, after taking secobarbital). The mean of a subject's two judgment-error scores for fatigued-group performances on placebo days was compared with the mean of his two judgment-error scores for that same swimming condition on secobarbital days to determine whether his judgment-error, under the fatigued-group condition, was greater after administration of secobarbital or placebo. This same general procedure was used in obtaining all comparisons reported below.

In addition to giving time-judgments a subject evaluated each performance by responding to a performance evaluation questionnaire containing 16 questions set up in this form: Did your legs feel: strong [ ], usual [ ], weak [ ]? The effects of the drugs on answers to these questions (subjective data) were examined in relation to the effects of the drugs on actual performance times (objective data) to obtain additional information regarding the influence of the drugs on judgment.

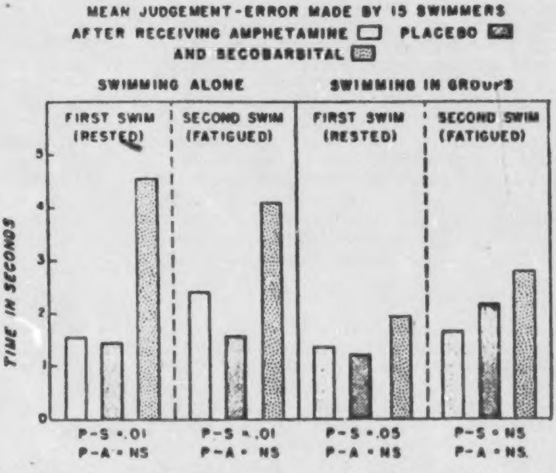

FIGURE 1.—Judgment-error, based on unsigned difference between swimming time and judgment of swimming time. Probability values reported for comparisons between placebo and two active drugs were obtained by two-tailed correlated t test. NS means not significant at 0.10 level. Direct tests of difference between solo and group conditions are not reported in fig. 1, but they were carried out; results indicated that on secobarbital days difference was significant at 0.01 level for first swim and at 0.10 level for second. On amphetamine days difference was not significant for either swim.

The *t* test was used to evaluate the data concerning judgment-error, judgment-tendency, performance time, and judgment time, as shown in fig. 1-4. The binomial sign test [8] was used to evaluate the questionnaire data in the table. Throughout the text and figures of this report, and in the table, comparisons are said to be not significant if they fail to reach the 0.10 level as determined by a two-tailed test.

On two solo days each subject took secobarbital, 100 mg. per 70 kg. of body weight, on two he took amphetamine, 14 mg. per 70 kg., of body weight, and on two he took placebo. Similarly, on two group days each man took secobarbital, on two amphetamine, and on two placebo. Secobarbital sodium was used as a control medicament to prevent a subject from correctly assuming he had received a "pep pill" whenever he noticed unusual sensations. The drugs were administered orally and in a counterbalanced order which was unknown to the subjects or to the experimenter collecting the data.

Each day a subject took two capsules. The first was taken two hours before the first swimming trial on six days and three hours before it on the other six. The second capsule was always taken 55 minutes before the first trial. On "secobarbital days" the first capsule was always a placebo and the second contained secobarbital; on "amphetamine days" the first was amphetamine and the second a placebo; and on "placebo days" both were placebos. The double capsule technique was used so that a subject would have his first trial 55 minutes after taking the active medicament on secobarbital days and either two or three hours after it on amphetamine days; these were the periods of peak subjective effects found in our preliminary unpublished studies of the drugs. The difference between the

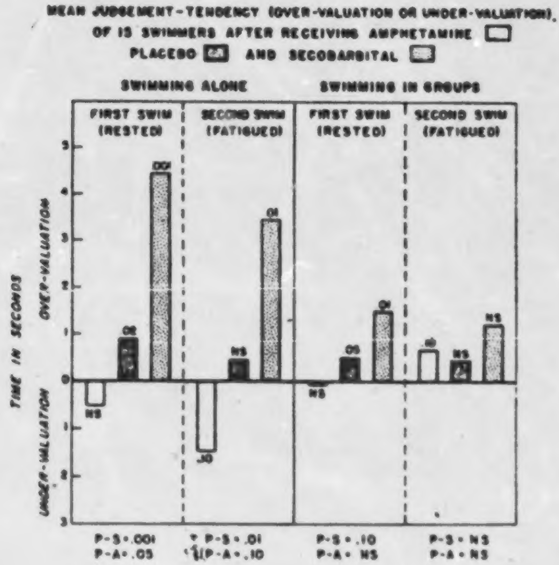

FIGURE 2.—Judgment-tendency, based on signed difference (algebraic sum) between swimming time and judgment of swimming time. Each level of significance was obtained with two-tailed correlated *t* test. Those appearing immediately above or below bars refer to differences between zero and mean judgment-tendency under given drug and given swimming condition. Those appearing at bottom of figure refer to differences between mean placebo tendency and mean tendency under one of two active drugs. NS means not significant 0.10 level. Direct tests of difference between solo and group conditions are not reported in fig. 2, but they were carried out; results indicated that on secobarbital days difference was significant at 0.001 level for first swim and at 0.02 level for second. On amphetamine days difference was not significant for first but was signficant at 0.05 level for second swim.

two-hour and three-hour conditions probably had no meaning on placebo days (since both capsules were placebos) or on secobarbital days (since secobarbital was always taken in the second capsule). The difference might have been meaningful on amphetamine days, because amphetamine was always taken in the first capsule. However, analyses failed to reveal any clear-cut differences between the two-hour and the three-hour amphetamine days, with respect to either performance or judgment. Hence, in the analyses reported in this paper, the two-hour and three-hour data obtained from a subject under a given swimming condition and a given medicament were averaged.

The subjects were told this was a study of the effect of pep pills on performance. They were told they would sometimes get placebos, or blank pills, instead of the pep pills. No mention was made of the fact that secobarbital would sometimes be given. The subjects were told that the assignment of medicaments was random and that members of a particular group might, but might not, receive the same medicament on a given day.

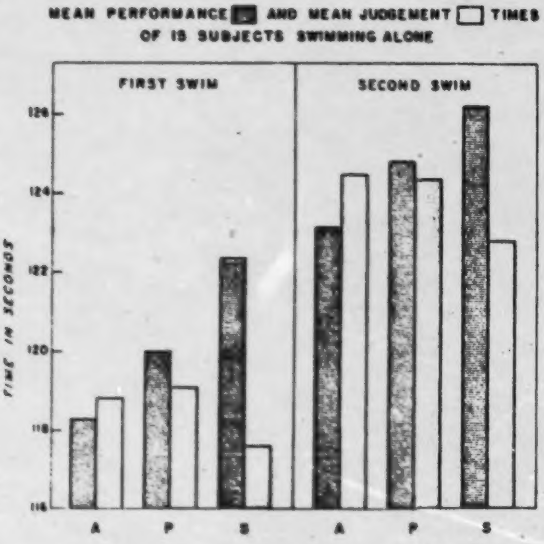

FIGURE 3.—A=amphetamine sulfate; P=placebo; S=secobarbital sodium. Two-tailed probability values for effects of drugs on mean performance times are first swim, P-A=0.01, P-S=0.01; second swim, P-A=0.10, P-S=0.05. Two-tailed probability values for effects of drugs on mean judgment times are first swim, P-A=NS, P-S=0.10; second swim, P-A=NS, P-S=0.10.

RESULTS

Since the styles and distances of the various subjects differed, their swimming times differed, ranging from about one minute to about three. The group means, with respect to perfromance and judgment times, were more strongly influenced by subjects swimming three minutes than by subjects swimming one. Analyses additional to those reported below were performed expressing each subject's judgment-error and judgement-tendency scores as percentages of his mean placebo performance score, thus eliminating the differential contribution to mean effects due to differences in swimming time. These analyses yielded the same conclusions as did those based on the simpler and more direct measures reported in this paper.

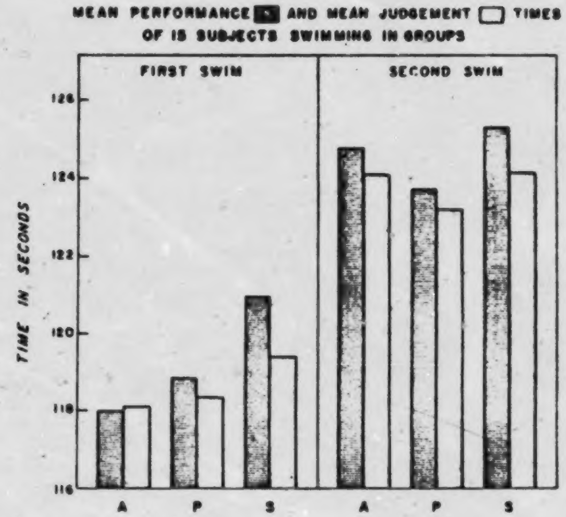

FIGURE 4.—A=amphetamine sulfate; P=placebo; S=secobarbital sodium. Two-tailed probability values for effects of drugs on mean performance times are first swim, P-A=0.10, P-S=0.001; second swim, P-A=0.10, P-S=0.01. Two-tailed probability values for effects of drugs on mean judgment times are first swim, P-A=NS, P-S=0.05; second swim, P-A=NS, P-S=NS.

Judgment-Error.—Fig. 1 shows the mean judgment-error made by the 15 swimmers after taking amphetamine, secobarbital, and placebo—when swimming alone and rested, alone and fatigued, in groups when rested, and in groups when fatigued. The significance levels refer to differences between the mean placebo error (made under a specific swimming condition) and the mean error made after taking on of the two active drugs (under that same swimming condition).

Fig. 1 shows that the greatest judgment-error occurred when the subjects swam alone and rested after taking secobarbital. Under that condition the mean error was about four and one-half seconds, about three times that made by the subjects when they swam alone and rested after taking placebo. Under all four swimming conditions the mean judgment-error was greater after taking secobarbital than after taking placebo. The difference reached the 0.01 level of significance for both swim 1 and swim 2, when the subjects swam alone. When they swam in groups the difference reached the 0.05 level for swim 1 but was not significant for swim 2. (The mean judgment-error due to secobarbital was significantly greater on solo days than on group days. The differences reached the 0.01 and 0.10 levels for the first and second swims respectively.) None of the four differences between mean judgment-error after amphetamine and mean judgment-error after placebo was statistically significant.

Judgment-Tendency (Overvaluation and Undervaluation).—Fig. 2 shows the mean tendency of the 15 swimmers to overvalue or undervalue performance after administration of amphetamine, placebo, and secobarbital. A subject overvalued his performance if he thought he swam faster than was the actual case. Bars rising above the horizontal line indicate that the error of the subjects, considered as a group, was in the direction of overvaluation. Bars going below the line indicate undervaluation. Significance levels appearing immediately above or below the bars refer to the differences between zero and the mean judgment-tendency under a given drug and given swimming condition. Those appearing at the bottom of the figure refer to differences between mean placebo tendency and mean tendency under one of the two active drugs.

The subjects, considered as a group, overvalued after taking placebo, overvalued still more after secobarbital, and undervalued (in three of the four comparisons) after taking amphetamine. When the subjects swam alone the difference between the placebo mean judgment-tendency and the secobarbital mean judgment-tendency reached the 0.001 level of significance for swim 1 and the 0.01 level for swim 2; when they swam in groups, the difference reached the 0.10 level of significance for swim 1 but was not significant for swim 2. The difference between the placebo and amphetamine judgment-tendencies was significant at the 0.05 level for swim 1 and the 0.10 level for swim 2, when the subjects swam alone; but when they swam in groups, neither comparison was significant.

The overvaluation due to secobarbital was significantly greater when the subjects swam alone than when they swam in groups ($p=0.001$ for swim 1 and 0.02 for swim 2). Also, the difference between the amphetamine mean judgment-tendency and the placebo mean judgment-tendency was greater when the subjects swam alone than when they swam in groups. The difference was not significant for swim 1 but reached the 0.05 level for swim 2.

Performance and Judgment.—Since the judgment-error data (fig. 1) and judgment-tendency data (fig. 2) are based on and derived from the relationship between performance time and judgment of time, it is of interest to examine the effects of the medicaments on each of these primary factors. Fig. 3 presents mean performance time and mean judgment time for the first and second swims under the solo condition. The subjects swam significantly slower after secobarbital than after placebo ($p=0.01$ for swim 1 and 0.05 for swim 2). Contrary to the actual impairment effect of secobarbital, the subjects, considered as a group, thought their performances were significantly faster after secobarbital than after placebo, on both swim 1 ($p=0.10$) and swim 2 ($p=0.10$).

When the subjects swam alone (fig. 3), amphetamine produced marked improvement on both swims ($p=0.01$ and 0.10 for first and second swims), but the subjects, considered as a group, thought that there was a slight impairment on the second swim and that the improvement on the first swim was much less than it actually was. Of the 15 swimmers, 13 performed better on amphetamine than on placebo days when swimming alone under rested conditions. Five of these 13 subjects judged their amphetamine performances to be poorer (instead of better) than their placebo performances and 6 undervalued the superiority of the amphetamine performances while only 2 overvalued it. When swimming alone under fatigued conditions 12 of the subjects performed better with amphetamine than with placebo. Seven of these subjects judged their amphetamine performances to be poorer (instead of better) than their placebo performances and three undervalued the extent of the superiority of the amphetamine performances while two overvalued it. Thus, under the solo condition, most of the subjects either failed to recognize the improvement in performance produced by amphetamine or, if they did recognize it, underestimated its extent.

Fig. 4 gives the mean performance time and mean judgment time when the subjects swam in groups of three. The effects of the drugs on mean judgment time parallel the effects of the drugs on mean performance time. As mean performance time goes up, mean judgment time goes up. Observe, however, that on both swims the differences among the mean judgment times were smaller than the differences among the mean performance times, indicating that although the subjects, considered as a group, correctly judged the direction of effect of both drugs, they underestimated the extent of effect of each drug.

Additional Subjective Data.—Responses to a 16-item questionnaire (designed to enable a subject to evaluate his performance) yielded results which are consistent, in general, with those reported above. Secobarbital significantly impaired performance (under both solo and group conditions), but the responses to the questionnaire indicated that most of the subjects failed to recognize the impairment produced by secobarbital under the group condition and thought secobarbital improved performance under the solo condition (see table).

Only four differences between amphetamine and placebo with respect to the 16-item questionnaire were statistically significant. The subjects reported feeling more "revved up" before the swim on amphetamine days but reported the start was slower, the swimming less easy, and the recovery slower on amphetamine than on placebo days (see table). These results indicate that the subjects failed to recognize the performance improvement produced by amphetamine; but the type of clear-cut and positive opposition between objective and subjective effects, observed with secobarbital under the solo condition, was not found with amphetamine.

COMMENT

The alterations in judgment due to secobarbital require little elaboration or explanation. The judgment-error data, judgment-tendency data, and performance-evaluation data all clearly demonstrate that a profound impairment of judgment was produced under the solo condition; most of the data suggest that a moderate impairment of judgment was produced when the subjects swam in groups of three.

The data concerning the effect of amphetamine on judgment are less clear in meaning. The judgment-error data revealed no greater error after amphetamine than after placebo (fig. 1). The judgment-tendency data showed significant differences between amphetamine and placebo under the solo condition, but these differences were due as much to the occurrence of overvaluation after placebo as to the occurrence of undervaluation after amphetamine (fig. 2). Both the performance-evaluation data (see table) and the mean judgment time data (fig. 3) indicated that, when swimming alone, the subjects thought their performances were about the same after amphetamine as after placebo; the fact, however, was that amphetamine significantly improved performance under the solo condition.

Additional evidence which would further clarify the meaning of the amphetamine data is sparse. Hauty and Payne,[16] with use of a different measure of judgment (by which the subject was required to estimate how well he would perform on a future trial rather than how well he had performed on a past trial), found that *d*-amphetamine (5 mg.) did not significantly influence the judgement of airmen studied with a psychomotor test. An earlier report by Davis[4] indicated that the antifatigue advantages of amphetamine might be counterbalanced by judgment impairment effects, but specific data demonstrating such judgment impairment were not presented.

Points for Emphasis.—Certain characteristics of the subjects and experimental situation, already mentioned, will be restated, because we believe they add to the dependability of the results obtained. The subjects were highly trained swimmers; each was accustomed to evaluating his performance and to estimating his speed. At the time of the investigation each subject was in midseason condition; thus, the variability of his performances was low. The judgments studied were not elicited in a contrived laboratory situation but were rather obtained in a real life situation, in which both swimming time and correctness of time-judgment appeared to be matters of importance to the subjects.

EFFECTS OF SECOBARBITAL SODIUM, 100 MG., AND AMPHETAMINE SULFATE, 14 MG., PER 70 KG. OF BODY WEIGHT, ON PERFORMANCE EVALUATIONS OF 15 SWIMMERS[1]

Questionnaire Item	Secobarbital vs. placebo								Amphetamine vs. placebo							
	Swimming alone				Swimming in groups				Swimming alone				Swimming in groups			
	S>P	S=P	P>S	p	S>P	S=P	P>S	p	A>P	A=P	P>A	p	A>P	A=P	P>A	p
1st swim; rested:																
Stroke felt good	11	4	0	0.01	9	3	3	NS	6	3	6	NS	8	5	2	NS
Swimming felt loose	10	5	0	.01	5	6	4	NS	3	8	4	NS	6	7	2	NS
Start seemed fast	8	7	0	.01	3	6	6	NS	8	4	3	NS	2	9	4	NS
Recovery was fast	5	5	5	NS	10	4	1	.05	1	8	6	NS	2	5	8	NS
Swimming felt fast	10	3	2	.05	9	1	5	NS	7	2	6	NS	9	2	4	NS
Swimming felt smooth	10	3	2	.05	7	4	4	NS	4	5	6	NS	9	2	4	NS
Swimming seemed easy	9	5	1	.05	10	1	4	NS	5	2	8	NS	7	6	2	NS
Made turns well	8	6	1	.05	6	4	5	NS	5	7	3	NS	5	4	6	NS
"Revved up" before trial	4	9	2	NS	8	5	2	NS	9	4	2	.10	9	2	4	NS
Did not have to drive self hard toward finish	9	4	2	.10	8	4	3	NS	5	4	6	NS	4	7	4	NS
2nd swim; fatigued:																
Swimming felt smooth	8	7	0	.01	6	3	6	NS	3	9	3	NS	4	3	8	NS
Recovery was fast	5	7	3	NS	7	5	3	NS	0	7	8	.01	2	7	6	NS
Swimming seemed easy	7	6	2	NS	5	6	4	NS	5	5	5	NS	2	4	9	.10
Start seemed fast	9	5	1	.05	4	8	3	NS	4	6	5	NS	1	6	8	.05
Made turns well	9	5	1	.05	5	6	4	NS	7	6	3	NS	4	5	6	NS
Swimming felt fast	11	1	3	.10	6	6	3	NS	5	4	6	NS	4	4	7	NS

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[1] S>P: number of swimmers who reported more of a characteristic, listed at the left, after taking secobarbital than after taking placebo; S=P: number of subjects reporting no difference between secobarbital and placebo; P>S: number of subjects reporting more of a characteristic after placebo than after secobarbital. p: probability value associated with a two-tailed binomial sign test evaluation of S>P vs. P>S or of A>P vs. P>A. NS means the comparison failed to reach the 0.10 level of significance. Questionnaire items are not reported for the 1st swim if they were nonsignificant (NS) under all 4 conditions; the same is done for 2d swim comparisons.

Differences Between Solo and Group Situations.—The effects of secobarbital and amphetamine on judgment-tendency and the effect of secobarbital on judgment-error were greater in the solo than in the group situation. Our data do not provide direct information concerning the reason for this difference. One can speculate, however, that when swimming alone the subject's time-judgment is probably based primarily on his "time sense" and whatever visual, cutaneous, and proprioceptive cues he obtains as he moves through the water. On the other hand, when swimming in a group (with team members whose usual speeds, in comparison with his own, are well known to him) his judgment is probably based on the additional cue of how he finishes in relation to his teammates. It is true that the degree to which this latter cue could be depended on by the swimmer was limited by the fact that he never knew which medicaments his teammates had received, or whether their performance times were altered. Nevertheless, we believe this additional cue in the group situation explains, in part, why the effects of the drugs on judgment were less in the group than in the solo situation. Whatever the explanation of the difference may be, the findings of principal interest are those obtained under the solo condition after administration of secobarbital, for these results show the extent to which the judgment of persons skilled in making the type of judgment studied can be distorted by such a drug.

Other Data Collected with Runners and Weight-throwers.—Judgment-error and judgment-tendency data were also collected on 25 runners and 13 weight-throwers but most of the comparisons in these subsequent studies were not statistically significant. This group of 38 subjects did yield evidence of one sort, indicating a tendency to attribute a favorable effect to secobarbital when in fact none existed. After each performance, a subject was asked whether he thought the medicament he had taken that day helped or hurt his performance and if so, how. Twelve of the subjects gave more favorable reports on secobarbital than on placebo days, 23 reported no difference, and 3 gave more favorable reports on placebo than on secobarbital days. The actual fact was that 20 of the 38 subjects performed better on secobarbital than on placebo days and 18 performed worse. The experimental conditions maintained in the studies in which these 38 subjects participated were different, in certain respects, from those maintained in the investigation described above. First, the dose of secobarbital was only one-half that used in the study reported in this paper.

Second, 16 of the 25 runners always ran under group conditions and, as shown above, the effects of secobarbital on the judgment of the swimmers were less in the group than in the solo situation and the effects of amphetamine were not significant in the group situation. Finally, the judgments of the 38 runners and weight-throwers were based on more dependable cues than were those of the swimmers. This was especially true of the weight-throwers; they actually observed the distance of each throw, and thus their after-performance estimates were a matter more of memory than of judgment. In the studies carried out, only one situation produced an indisputable example of judgment distortion, and that was the situation in which swimmers performed after taking 100 mg. of secobarbital.

PRACTICAL IMPLICATIONS

Under solo conditions secobarbital produced a judgment distortion of a profound sort; although performance was significantly impaired ($p=0.01$ for first swim and 0.05 for second swim), the subjects thought it was significantly improved ($p=0.10$ for both swims). Most of the data indicate that secobarbital produced a moderate judgment distortion when the swimmers performed in groups. We do not know whether this distortion was one of time-judgment only or whether it was of a more general nature; also, we do not know whether secobarbital would produce judgment distortion in a person who is accustomed to taking this drug. However, we think the findings described above have important practical implications because barbiturates are in widespread use[9] and because it is likely that many persons make decisions and judgments, and engage in potentially dangerous activities such as driving automobiles, after taking these drugs. The extent to which their decisions, judgments, and activities are influenced by the drugs, and the situational factors which alter such drug influences, are questions which have merited study[1] and require further study.

It is appreciated that alcohol can impair judgment and add to the hazard of normal activities. One can only wonder how many accidents occurring each year on the highway, in industry, in the home, and elsewhere are due in part to impairment produced by barbiturates, analeptics, tranquilizers, and other drugs given to ambulant patients. The widespread use of these medicaments by persons whose decisions, judgments, and behavior affect their own welfare and the welfare of others makes further quantitative assessment of the mental and behavioral effects of these agents a matter of practical importance.

SUMMARY AND CONCLUSIONS

Fifteen college swimmers, in midseason condition, swam 360 time trials after receiving secobarbital sodium, 100 mg. per 70 kg. of body weight, amphetamine sulfate, 14 mg. per 70 kg., or placebo on different occasions. The "double-blind" procedure was used. After each trial, a swimmer gave his time-judgment for that performance and completed a performance-evaluation questionnaire before being told his actual performance time. Each subject swam 12 trials under rested and 12 under fatigued conditions. He performed half of his rested and half of his fatigued trials swimming alone. He performed the remaining trials swimming with two other subjects. The data were collected in a "real life" situation rather than a laboratory.

Comparisons between placebo and each of the two active drugs were made with respect to judgment-error (the unsigned difference between performance time and judgment time, judgment-tendency (the signed difference between performance time and judgment time, performance time, judgment time, and responses to a performance-evaluation questionnaire. Significance levels of the various comparisons were computed.

When the subjects swam alone, secobarbital significantly altered the mean judgment-tendency (the tendency being toward moderate overvaluation after placebo and extreme overvaluation after secobarbital), significantly increased the mean judgment-error, and caused the subjects to evaluate their performance, when in fact the performance were significantly slower. When the subjects swam in groups of three, after taking secobarbital, there was a tendency in the direction of a judgment distortion of the sort just mentioned but the effects were much less clear. When the subjects swam alone, amphetamine did not significantly alter the mean judgment-error overvalue after placebo and to undervalue after amphetamine); the judgment-time data (fig. 3) and questionnaire data (see table) indicated that, when swimming alone, most of the subjects either failed to recognize the improvement in performance alone, most of the subjects either failed to recognize the improvement in performance produced by amphetamine or failed to appreciate its extent. When the subjects swam in groups, amphetamine did not produce significant effects on any of the measures of judgment. The effects of both active drugs on judgment-tendency, and the effects of secobarbital on judgment-error, were greater when the subjects swam alone than when they swam in groups of three.

It is concluded that secobarbital in the dose of 100 mg. per 70 kg. of body weight can, under certain circumstances, produce a profound distortion in judgment. A positive conclusion concerning the question whether amphetamine sulfate, 14 mg. per 70 kg. of body weight, is able to produce judgment distortion cannot be drawn from the present data. Since the drugs studied are in wide use, information concerning their effects on judgment is of interest, and the striking judgment distoritition produced by the barbiturate is particularly important from the practical standpoint.

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APPENDIX 14

Medical aspects of the Olympic Games

Pill Popping and Performance

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■ We are a pill-taking culture, and the belief that "miracle drugs" can change behavioral situations is firm[illegible] held in the United States. In most instances, that belief is a false one. "Better living through chemistry" does not necessarily mean taking another pill.

The Search for a Magic Potion

The search for a magic potion to increase performance is not a modern phenomenon. Macedonian soldiers are said to have used a mescalinelike substance obtained from mushrooms; a group of Nordic soldiers called the Berserkers used a constituent of a fungus; in the very early Olympic Games the Greeks used certain mushrooms.

Toward the end of the sixteenth century, Europeans learned the use of caffeine-containing drugs. In 1865, a doping case among the canal swimmers of Amsterdam was reported. And in the six-day bicycle races in 1879, racers used such wondrous prescriptions as mixtures with a caffeine base, sugar cubes dipped in ether, cordials containing alcohol, and nitroglycerin. The first fatality due to doping was reported in 1886; Lenton, an English cyclist, died during the race between Paris and Bordeaux, from an excessive dose of a stimulant drug reportedly given to him by his coach.

Down through the years since the 1880s, very few sports have gone untouched by the search for a magic potion. In 1955, evidence of amphetamine use was found in half of the competitors in a six-day European bicycle race. At the Olympic Games in Rome in 1960, some of the cyclists showed me broken ampules that had been picked up from the floor of the locker rooms of other nations and asked, "Why can't we have some of this?" Later in the same games, Knude Jensen died following a bicycle race; he reportedly had taken large doses of amphetamine and a vasodilator. More recently, Simpson, a British cyclist, died after a race; the cause of death allegedly was an overdose of methamphetamine.

The Placebo Effect

The history of medicine up to the last few generations has been, with few notable exceptions, the history of the placebo effect, and in the history of attempts to improve performance in sports, there have been no notable exceptions.

The potential that chemicals and drugs have for improving the quality of life is great, but there is an immeasurable difference between that potential and what can be accomplished in the "here and now."

Is it possible to supercharge the cells of a normal, healthy individual to produce a better performance? The potential may be there, but not the reality. In sport, the degree and consistency of physiologic change produced by any drug must be appreciated in its quantitative relationship to all other factors that influence total performance. If, for example, a drug increases cardiac output by

10 percent, it does not follow that 10 percent more work can be accomplished by a healthy individual who has taken the drug. The basic fact is that none of the drugs that are supposed to improve performance works very well. The placebo effect is as strong as the physiologic effect, and for all practical purposes, it is the only effect that counts.

The Opposite Effect

What seems to have been lost in the frenzied search for the magic potion is the fact that no drug produces its intended benefit 100 percent of the time. The tremendous individual variations and reactions to drugs mean that medications may produce the exact opposite of the desired effect. Amphetamines are not always stimulating. There is a growing body of evidence that the use of amphetamines may, in fact, decrease work output!

A significant number of reactions that are opposite to the desired and intended effect of a drug (for example, the muscular spasms that may occur with phenothiazine and the psychoses that can result from the continued use of amphetamines) appear to be overlooked by those in search of the easy way. Recent studies in experimental animals and in human beings indicate the development of hyperinsulinemia after the administration of amphetamines. Hyperinsulinemia and the resulting hypoglycemia certainly are not conducive to improved performance. This effect may start with the first dose.

Control of Doping

Doping is defined as "The administration of or the use by a competing athlete of any substance foreign to the body or of any physiologic substance taken in abnormal quantity or taken by an abnormal route of entry into the body, with the sole intention of increasing in an artificial and unfair manner his performance in competition. When necessity demands medical treatment with any substance which because of its nature, dosage, or application is able to boost the athlete's performance in competition in an artificial and unfair manner, this is to be regarded as doping."

Early attempts to control the practice of doping in sports involved inspection of luggage, equipment and quarters as well as physical examinations just before the event. These were a total failure. New rules and regulations were promulgated by several of the sports groups, and these also failed dismally. Attempts at education failed, but these perhaps were inadequate.

In 1910 a Russian chemist devised a means of testing the saliva of horses for dope. This opened the door for the beginning of the first real dope control program. In 1935, the Florida Racing Commission estimated that 30 to 50 percent of all race horses were doped. In 1969, the same source indicated that less than 1 percent were doped—proof that dope control works, at least with horse races.

With athletes, well-run dope control programs would decrease the amount of doping, and this combined with a sensible education program would go a long way toward eliminating the problem entirely. But the education component has to include some strong words about the pseudoscientific experimenters who test six athletes with steroids and then send out 10,000 reprints describing the wonders of this medication. The facts must be presented to physicians so they will accept them, and to coaches and athletes so they will both understand and accept them. No one has yet been able to accomplish this.

The negative side of the doping scene, that is, the administration of a substance to slow down an athlete or to make him ill, is largely a thing of the past. But not too long ago, top college football teams brought their own water supplies with them when they traveled.

The Current Doping Scene

Amphetamines, ephedrine, caffeine, methylphenidate, barbiturates, diazepam and steroids, alone or in combination and with or without vitamins, account for most of the substances used in the current scene of doping in sports. None of these has any legitimate place in sports, but they are used. Do they do physiologic good? Do they make winners out of losers?

All the studies made have been of small numbers of athletes in varying states of fitness and have used performance as the ultimate measuring stick, ignoring completely the fact that performance is always variable. In some studies, the amount of expected day-to-day variation in performance is greater than the benefit ascribed to the drug being tested. No drug shows any consistent benefit to a well-trained, top-class athlete whose normal performance varies within a narrow range.

Doping and Winning

The fact that only the winners are tested in dope control programs implies that doping and winning are connected. This is not necessarily so. The saga of the world weight-lifting championships held in September 1970 in Columbus, Ohio, serves as an example. Athletes in the first three of the nine weight-lifting classes competed on Friday, Saturday and Sunday, and each lifter who finished first, second or third was required to furnish a urine specimen for dope control. However, the laboratory was closed for the weekend, so it was not known until Monday that eight of the nine who finished in the first three places turned in specimens positive for amphetamines. These athletes were disqualified, and those who finished fourth, fifth and sixth were declared the winners, without having had dope control tests. The competition continued throughout the next six classes. On Monday, the day it became known that dope tests were being done, only one of three winners had specimens positive for amphetamines, and each day thereafter all the winners had negative results.

One of the U.S. heavyweight lifters, speaking of the disqualifications, said, "It's ridiculous. Athletes in this sport have been taking amphetamines under doctor's prescriptions for years."

It is interesting that there were no changes in the athletes' ability to lift. As a matter of fact, according to John Terpack, Olympic weight-lifting

Table 1. Amphetamine study in cycling road race, 1967

	No.
Urine samples collected*	110
Racers tested	57
Positive results	8
Winners disqualified†	3
Losers disqualified	5
Countries involved in positive results	4

*Testing was admittedly incomplete. Only the first 10 of a field of over 40 in the race were tested, and only the first four teams of a field of 10 in the 100 km race were tested.

†Winner at any level of competition in heats and the first three finishers in finals.

Table 2. Amphetamine study, 1970

		Order of finish	
	Code number of athlete	First event	Second event
First day	076	9	18
	049	12	
Second day	087		15
	068		26

Table 3. Caffeine study, 1970

		Order of finish		
	Code number of athlete	First event	Second event	Third event
First day	020		29	
	024		27	
	086	3	14	
	087		9	
Second day	021	31 (last)	30	
	046	10	14	
	048	2	12	
	086		12	
	049	5	10	
	058	24	15	
	020	29	30	
	076		22	
Third day	076	20		20
	068	18		19
	086	Not ranked		Not ranked

[redacted]

coach, "There were more records broken in the last half of the competition when all the tests were negative than during the first part of the competition. Weight lifters get absolutely no assist from amphetamines."

Dope Testing Programs

Since 1967, several programs of dope testing have been held at world and national competitions. Each program has documented the fact that there is no wonder drug.

In August 1967, some of the cyclists in a road race in Rome were tested for drugs. Positive results for amphetamines were found in eight of 110 urines tested. Of the eight cyclists with positive results only three were winners and five were losers (table 1).

In 1968, 17 percent of all players in an Italian soccer league had urine specimens positive for amphetamines.

In 1970, a study was made at the world championships in another sport. Urine tests to detect amphetamine were made on the three winners in each event and on some of the losers. Both thin-layer and gas chromatography were used. All the athletes who had traces of amphetamine in their urine samples were losers (table 2). Urine tests were also made to detect more than the "usual" amounts of caffeine, that is, more than would be expected after "a few cups of coffee." Caffeine did not improve performance and may even have been deleterious (table 3). Only two of the athletes with high urinary levels of caffeine were winners, finishing second or third, and the remaining 23 finished fifth place or lower.

In the 1971 national trials of another sport, every contestant was checked at the finish of each day's competition. Of the 73 specimens collected, only one showed amphetamine, one showed a tranquilizer, and one showed an "unknown alkaloid." The athlete with the amphetamine finished tenth in one event and a poor third in two other events. The tranquilized athlete finished twenty-second in one event and fifth and sixth in the other two events in which he competed. The athlete with the "unknown alkaloid" finished sixth place in the two events in which he competed. All three athletes finished in just about the same places and at about the same times that they had in the practice sessions during the previous two weeks. It is interesting that although both men and women were involved in these trials, no women had specimens positive for dope.

What About Steroids?

The detection of exogenous steroids in athletes is a practical impossibility, but their use is known and thought to be widespread in certain sports, especially those requiring strength. Do steroids improve performance? The claim that steroids enhance performance is unproved; the companion fable that increased weight means increased strength is also unproved. Anabolic steroids do increase weight in normal young adults, but the weight gain probably represents mostly fluid retention.

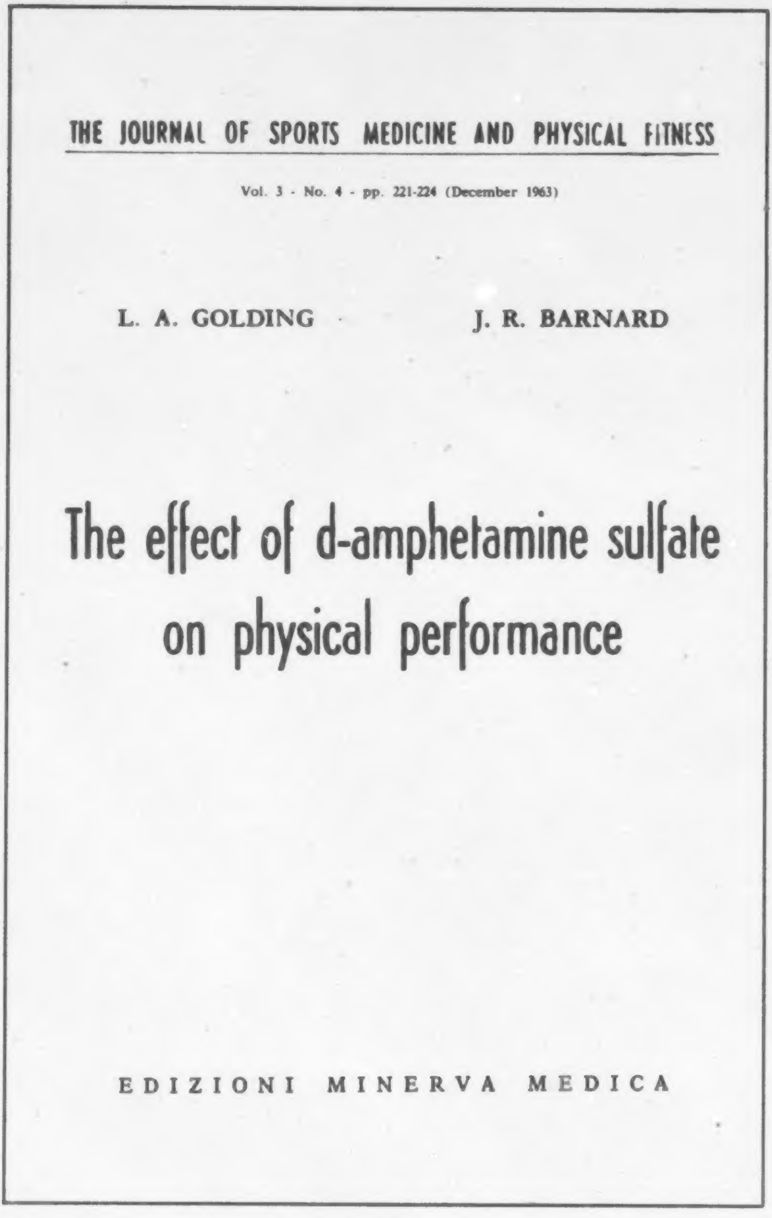
From a practical point of view, the world record in the shot put has stood since 1967, in spite of the hundreds of normal, healthy young men who have absorbed more steroids than reasonable men would believe possible, in the vain hope that a new record would be theirs with a few more pounds of weight.

No Easy Way

In my 30 years of association with athletes, magic potions have included gelatin, iron pills, oxygen, vitamins, wheat germ, aspartic acid, amphetamines, steroids, and high-protein dietary supplements. But there is no easy way. In sports, desire with a capital D and intelligent practice, coupled with the necessary physical equipment and the ability to use that equipment, are what make a winner.

One of my personal heroes, Sir William Osler, said it best: "Though a little one, the master-word looms large in meaning. It is the open sesame to every portal, the great equalizer in the world, the true philosopher's stone, which transmutes all base metal of humanity into gold. The stupid it will make bright, the bright brilliant, the brilliant steady. To youth it brings hope and accomplishment, to the middle-aged confidence, to the aged repose. It is directly responsible for all advances in medicine for the past 25 years. Not only has it been the touchstone of progress, but it is the measure of success in everyday life. And the master-word is *Work*." ◉

APPENDIX 15



THE JOURNAL OF SPORTS MEDICINE AND PHYSICAL FITNESS

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L. A. GOLDING J. R. BARNARD

The effect of d-amphetamine sulfate on physical performance

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INTRODUCTION

In the mid 1950's the alledged widespread use of amphetamine by athletes during competition was brought to the attention of the American Medical Association. In 1957 the A. M. A. appointed a committee on Amphetamine and Athletics. Questionnaires were sent to coaches, trainers, and athletes, requesting information on the use of amphetamine by athletes. When the questionnaires were returned and tabulated, less than 1 per cent indicated any knowledge of the use of amphetamine during athletic performance.

A similar survey was conducted by the American College of Sports Medicine.[1] It found that 46 of the 133 returned questionnaires (35 %) indicated that amphetamine was being used by athletes during competition.

The American Medical Association Committee on Amphetamine and Athletics also supported two major research projects to test the actual effect of amphetamine sulfate on performance. Smith and Beecher[7] found that 14 to 21 mg. of amphetamine sulfate per 70 kg. of body weight administered two to three hours prior to performances in running, swimming, and weight throwing, improved performance in 75 per cent of the cases tested.

Karpovich[4] administered 10 to 20 mg. of amphetamine sulfate one-half to one hour before performances in track running, swimming, and treadmill running. He found that 50 of 54 subjects showed no change in performance with the drug. Three subjects did improve performance with amphetamine, while one showed a decrement.

Other studies on the effect of amphetamine sulfate (benzedrine) on performance include a study by Foltz et. al.[2] who measured performance by exhaustive rides on a bicycle ergometer. They found that 10 to 15 mg. of amphetamine sulfate (benzedrine) had no significant effect on the performance of four conditioned subjects.

Haldi and Wynn[3] tested the effect of amphetamine (benzedrine) on swimming performance. They found that 5 mg. of amphetamine administered orally ninety minutes before a 100-yard swim, had no significant effect on the time of the swim.

MEDICAMENT

Dextro-amphetamine is a powerful central nervous system stimulant which increases alertness, attentiveness, and ability to do mental processes. It is more popularly known for its ability to reduce or abolish the sense of fatigue. Being classified as a sympathomimetic drug, it is capable of causing vasoconstriction, increased blood pressure and heart rate, respiratory stimulation, smooth muscle relaxation in the bronchi, pupillary dilation, increased blood sugar, and increased muscle tension. Five to ten mg. is the ordinary therapeutic dosage used to achieve cortical stimulation.

For this investigation 15 mg. of d-amphetamine sulfate were administered orally. Lactose was used as a placebo. All capsules were administered by the University Health Center, using the double-blind method.

DESIGN

The purpose of this investigation was to study the effect of d-amphetamine sulfate on performance as measured by all-out treadmill running times. The basic design called for two all-out runs on each test day. The first, or rested, run was used to study the effect of the drug on initial performance. The second, or fatigued, run was performed twelve minutes after the completion of the rested run. Because d-amphetamine is capable of reducing or abolishing the feeling of fatigue, it was felt that the second run was necessary in order to study the effect of d-amphetamine sulfate on performance in a fatigued subject. The double work period was also used in view of the results reported by Foltz et. al.[2] who felt that the second, or fatigued, performance gave more reliable results than the rested run.

Heart rate, blood pressure, and respiration rate were measured in a rested condition and again during recovery to test the effect of d-amphetamine on these physiological variables. Blood sugar determinations were also made to test the effect of d-amphetamine on blood sugar concentration.

PROCEDURE

This experiment was conducted during the track season on twenty subjects. Ten of the subjects were conditioned athletes, all members of the university track team. The other ten subjects were unconditioned university students. The subjects ranged in age from 18 to 25 years. Before being allowed to participate in the experiment, each subject was given a special medical examination by a university physician, who acted as a medical consultant for the experiment.

Many of the conditioned subjects had participated in previous experiments involving a treadmill; the others were all given preliminary training at treadmill running. During the experiment the treadmill was operated at 10 miles per hour at an 8.5 % grade. Running time was measured on a stopwatch to the nearest second.

The ten conditioned subjects followed the following procedure for their tests. Two to three hours before the subject was scheduled for his treadmill runs, he reported to the University Health Center where his capsule was administered. At the designated time the subject reported to the laboratory. He then rested in a lying position for approximately five minutes. At the end of the five minute rest period, heart rate, blood pressure, and respiration rate were recorded. A sample of blood was taken from a capillary puncture for glucose determination. The subject then ran on the treadmill to exhaustion. Immediately following the run, the subject was placed on a bed. Starting at the end of the first minute following the run, recovery rates for heart rate, blood pressure, and respiration rate were checked every minute for a ten-minute period. One minute was allowed after the ten-minute recovery check for the subject to get back on the treadmill.

TABLE 1.—*The effect of dextro-amphetamine sulfate on all-out treadmill running.*

Conditioned subjects	Drug Mean	Placebo Mean	Mean Diff.	"t"	L.S.
Rested runs (sec.)	214.56	211.89	2.67	0.18	N.S.
Fatigued runs (sec.)	131.07	132.92	1.85	0.86	N.S.
Rested heart rate (beats/min.)	81.93	73.85	8.08	2.92	0.01
Rested blood pressure (mm./Hg.)	146.77	133.48	13.29	4.89	0.001
Rested respiration rate (times/min.)	16.78	16.96	0.18	0.09	N.S.
Heart rate after first recovery (beats/min.)	127.24	121.64	5.60	1.45	0.20
Blood pressure after first recovery (mm./Hg.)	157.26	144.70	12.56	2.86	0.01
Respiration rate after first recovery (times/min.)	23.56	22.04	1.52	1.15	N.S.
Heart rate after second recovery (beats/min.)	128.12	118.64	9.48	2.82	0.01
Blood pressure after second recovery (mm./Hg.)	160.85	150.44	10.41	2.11	0.05
Respiration rate after second recovery (times/min.)	24.44	23.30	1.14	0.74	N.S.
Rested blood sugar (mg./100 ml.)	118.54	117.67	0.87	0.32	N.S.
Blood sugar immed. After second run (mg./100 ml.)	176.56	170.88	5.68	0.96	N.S.
Blood sugar 10 minutes after second run (mg./100 ml.)	169.80	164.61	5.19	0.17	N.S.
Unconditioned subjects					
Rested runs (sec.)	116.30	111.20	5.10	0.45	N.S.
Fatigued runs (sec.)	80.90	81.30	0.40	0.07	N.S.

Exactly 12 minutes after the completion of the first run, the subject made another all-out run. He was again placed on the bed and checked for another ten-minute recovery period. Blood samples were taken immediately after the run and again after the ten minute recovery period for glucose determination. The subject then received his capsule order slip for the next test.

Each conditioned subject was asked to perform the preceding test six times (three with the drug and three with the placebo). At least one day of rest was allowed between each test.

The unconditioned subjects were only asked to perform the test two times, once with the drug and once with the placebo. The double blind method was also used in administering the capsules to the unconditioned subjects. These subjects were given a week to rest between tests.

ANALYSIS OF THE DATA

To determine the effect of d-amphetamine sulfate on all-out treadmill running, the mean difference in running times between the drug and the placebo runs was tested for significance by the use of the t-test. The t-values obtained for the differences between the mean drug and mean placebo times showed that d-amphetamine sulfate had no significant effect on all-out treadmill runs performed in a rested or fatigued state by conditioned or unconditioned subjects.

To determine the effect of d-amphetamine sulfate on respiration rate, blood pressure, heart rate, and blood glucose, the mean differences of these variables were also tested for significance by the t-test.

In the resting measurements, d-amphetamine sulfate significantly increased heart rate ($p<.01$) and blood pressure ($p<.001$) but had no effect on respiration rate. During the recovery period following the rested runs, d-amphetamine significantly retarded recovery for blood pressure ($p<.01$), but had no significant effect on heart rate or respiration rate. During the recovery period following the fatigued runs, d-amphetamine significantly retarded recovery for heart rate ($p<.01$) and blood pressure ($p<.05$), but again did not effect respiration rate. Dextro-amphetamine had no significant effect on blood sugar concentration. The t-values obtained for all measurements are given in Table 1.

SUMMARY AND CONCLUSIONS

In an investigation to test the effect of d-amphetamine sulfate on all-out treadmill running, ten conditioned and then unconditioned subjects were given 15 mg. of d-amphetamine sulfate or a placebo (lactose) two to three hours before the tests. An analysis of the rested and fatigued runs performed by conditioned subjects showed that d-amphetamine sulfate had no significant effect on performance. The rested and fatigued runs performed by the unconditioned subjects were also analyzed. Again, dextro-amphetamine sulfate had no significant effect on the performance of these runs. An analysis of the mean drug and mean placebo measurements taken in the rested state showed that the drug significantly increased heart rate and blood pressure, but had no effect on respiration rate. The recovery rate for blood pressure after the rested runs was retarded by d-amphetamine, but it had no significant effect on heart rate or respiration rate. Following the fatigued runs, recovery rates for heart rate and blood pressure were retarded, while respiration rate was again uneffected. Dextro-amphetamine sulfate had no significant effect on blood glucose.

L. A. GOLDING, J. R. BARNARD

The effect of D-amphetamine sulfate on physical performance.

The purpose of this investigation was to study the effect of d-amphetamine sulfate on athletic performance as measured by all-out treadmill runs. Both conditioned and unconditioned subjects were used in the study. Each subject performed two all-out treadmill runs during each of six testing periods. The first, or rested, run was used to study the effect of the drug on initial performance. The second, or fatigued, run was to study the effect of the drug on performance in a fatigued condition. Two to three hours prior to the test, either fifteen mg. of d-amphetamine sulfate or a placebo (lactose) was administered, using the double blind method. Dextro amphetamine sulfate had no significant effect on performance.

L. A. GOLDING, J. R. BARNARD

L'effet du sulfate de D-Amphétamine sur le rendement physique.

Le but de cette étude était d'examiner l'effet du sulfate de d-amphétamine sur le rendement athlétique, mesuré par la course à toute vitesse sur tapis roulant. Des sujets conditionnés et non conditionnés furent soumis à l'épreuve: chacun devait accomplir deux courses au cours de chacune des six périodes d'expérience. La première course, avec des sujets reposés, devait permettre d'examiner l'effet du médicament sur le rendement initial. La seconde, avec des sujets fatigués, son effet sur le rendement en conditions de fatigue. De 2 à 3 heures, avant l'épreuve, à une partie des sujets étaient administrés 15 mg. de sulfate

de d-amphétamine, et à l'autre un placebo (lactose); le sulfate de d-amphétamine n'a pas d'effet significatif sur le rendement.

L. A. GOLDING, J. R. BARNARD

Die Wirkung von D-Amphetaminsulfat auf die körperliche Kondition.

Der Zweck dieser Untersuchung war das Studium der Wirkung des D-Amphetaminsulfates auf die athletische Leistung, gemessen beim Radfahren. Beide, sowohl die trainierten, als auch die untrainierten Versuchspersonen, wurden hinzugezogen. Jeder einzelne führte zwei Tretversuche bis zur Erschöpfung in sechs Testperioden durch. Der erste Versuch wurde dazu verwandt, die Wirkung im Anfang des Trainings zu studieren, der zweite hatte das Studium der Ermüdung zum Zweck. Zwei oder drei Stunden vor dem Test wurden 15 mg des D-amphetaminsulfates oder ein Placebo verabreicht, womit der doppelte Blindversuch benützt wurde. Dextroamphetaminsulfat hatte keinen signifikanten Einfluss auf die Leistung.

L. A. GOLDING, J. R. BARNARD

El efecto del sulfato de D-Anfetamina en la performance física.

Se empleó la droga en sujetos que estaban previamente en reposo y en otro grupo de individuos fatigados. Se les hacia correr sobre una correa sin fin durante 6 periodos. El primer grupo, al efectuar la carrera fue utilizado para estudiar el efecto de la droga en la iniciación de la performance. El grupo de los fatigados sirvió para ver el efecto de la droga cuando corrían. Dos a tres horas antes de las pruebas, se les administraba, ya sea 15 mg. de sulfato de d-anfetamina, o bien, un placebo (lactosa). La dextro anfetamina no tuvo un efecto significativo sobre la performance.

L. A. GOLDING, J. R. BARNARD

L'effetto del solfato di Destro-metilfenetilamina sul rendimento fisico.

Lo scopo di questo studio era di esaminare l'effetto del solfato di D-metilfenetilamina sul rendimento atletico misurato nella corsa a tutta velocità sul tappeto mobile. Sia i soggetti allenati che quelli non allenati compirono due corse su tappeto durante ognuno dei sei periodi di prova. La prima corsa, da riposati, serviva per studiare l'effetto del farmaco sul rendimento iniziale. La seconda, da affaticati, era per studiare l'effetto del farmaco sul rendimento in condizioni di fatica. Due o tre ore prima del test, a una parte dei soggetti venivano somministrati 15 mg. di solfato di Destro-metilfenetilamina ed agli altri una sostanza innocua (lattosio). Il solfato di Destro-metilfenetilamina non esercitava un'azione significativa sul rendimento.

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APPENDIX 16

EFFECT OF AMPHETAMINE SULFATE ON ATHLETIC PERFORMANCE

(By Peter V. Karpovich, M.D., Springfield, Mass.)

(J.A.M.A., Vol. 170, No. 5, May 30, 1959)

Recently there has been a great deal of agitation regarding the use of amphetamines in athletics. This agitation has been based mainly on rumors or second-hand information regarding one or two athletes who reportedly have admitted the use of amphetamine (Benzedrine) sulfate. It is, however, not known how these athletes would have performed with and without this drug under conditions of a controlled experiment.

While it is well known that amphetamines can cause euphoria and various degrees of insomnia which prolong wakefulness which might be used for activity, no reliable evidence exists that amphetamines are effective in increasing either endurance or speed in athletic activities. For this reason, the present study was undertaken. This study was so designed that it would be possible to detect the effect of the drug on endurance, recuperative ability, and speed of athletic performance under two conditions: "laboratory" conditions and under emotional stress during actual athletic competition.

METHODS

Activities.—The following activities were included: (1) running to exhaustion on an electrically driven treadmill at 7.2 mph and 5-degree inclination twice in succession with a 10-minute rest in between the runs, (2) swimming 100 yd. as fast as possibe twice in succession with a 10-minute rest in between, (3) swimming 220 and 440 yd. once on each testing day, (4) running 220 yd. on an outdoor track for time trials, and (5) running various distances (from 100 yd. to 2 miles) during competition. Altogether 532 tests were used for statistical analysis.

All "laboratory" experiments consisted of six tests done on six different days, three times with the drug and three times with a placebo. Experiments during actual contests were planned so that each subject would run from four to eight times, one-half of the runs with amphetamine and one-half without. However, since it was not always possible to know ahead of time what subject would take part in the contest, the number of tests and the order of administration of the drug and placebo varied.

Medication.—From the standpoint of medication, this study may be divided into two parts. In 1958 all but four subjects were given a capsule of 10 mg. of amphetamine sulfate one hour before the test. These four subjects received 20 mg. 30 minutes before the test. The drug and the placebo were administered from six coded bottles and given to subjects in rotating order. Neither I nor any assistants knew the code, which was kept in the A.M.A. headquarters on my request.

In 1959, although the drug and the placebo were administered from coded bottles, I, but not my assistants, knew the code. This was done in order to expedite the detection of individuals who were affected either beneficially or deleteriously by the drug so that they could be subjected to additional tests. In 1959 all subjects received 20 mg. of amphetamine or placebo 30 minutes before the test. In both series, the placebo was made of calcium lactate.

Subjects.—All subjects were male college students. Most swimmers and all trackmen were varsity men. All the treadmill runners, some of whom were also varsity men, received preliminary training in running on the treadmill. Twenty-five men were used on the treadmill, 18 in swimming, and 11 in track time trials during competition. Altogether, 54 subjects were used. All subjects had a medical examination. Blood pressure and pulse rate were taken on several occasions one-half hour and one hour after medication. Since no particular variations were observed, this procedure was discontinued.

MEAN TIME (IN SECONDS) OF PERFORMANCE WITH AND WITHOUT AMPHETAMINE[1]

	Swimming 100 yd (11 men)			Swimming		Track			Treadmill (11 men)			Treadmill (10 men)			Treadmill (special group of 4 men)		
	1st swim	2d swim	Difference	220 yd (16 men)	220 yd (11 men)	440 yd (9) men)	220 yd (9 men)	Competition[2] (12 men)	1st run	2d run	Difference	1st run	2d run	Difference	1st run	2d run	Difference
Amphetamine	62.34	62.81	0.47	168.62	151.2	311.6	25.13	99.4	391.06	281.63	109.43	241.40	232.79	8.61	232.2	169.8	62.4
Placebo	62.33	63.20	.87	169.64	151.6	311.0	25.15	100.0	398.24	279.72	118.52	258.60	227.44	31.16	249.7	148.2	101.5
Amphetamine minus placebo	.01	−.39	−.40	−1.02	−.4	.6	−.02	−.6	−7.18	1.91	−9.09	−17.20	5.35	−22.55	−17.5	21.6	−39.1
Amphetamine, 1st plus 2d	125.15								672.69			474.19			402.0		
Placebo, 1st plus 2d	125.53								677.96			486.04			397.9		
Amphetamine total minus placebo total	−0.38								−5.27			−11.85			4.1		

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[1] Subjects in each group, except "treadmill (10 men)," received at least 6 tests. In this group only 4 tests were given. Analysis of variance of performance time and also of variance in time differences between 1st and 2d "runs" in swimming and treadmill running showed no statistically significant differences between effects of amphetamine and placebo.

[2] Varsity meets, 100, 220, and 440 yd; ½, 1, and 2 mi. Time of running with the placebo was taken as 100 percent.

RESULTS

Treadmill Runs.—Tests with 10 mg. of amphetamine given to 11 subjects one hour before the run showed no evidence of either a beneficial or deleterious effect of the drug on the endurance and recuperation from fatigue. From the table it may be seen that the average times for the first runs were 391.06 seconds with the drug and 398.24 seconds with the placebo. The duration of the second run was 281.63 seconds with the drug and 279.72 with the placebo. The average total times were 672.69 seconds and 677.96 seconds respectively. Analysis of variance of times showed that the differences between the figures in each pair were not statistically significant.

Tests with 20 mg. of amphetamine given to 10 subjects one-half hour before the run also gave no statistically significant difference (see table).

Tests with Amphetamine on a Special Group: Four men, highly interested in the experiment and therefore highly motivated to do their utmost, were each tested seven times. Most of the subjects felt a sense of euphoria after taking the capsule containing 20 mg. of amphetamine, the effect being noticeable about 30 minutes after taking the capsule. They also thought that they could run longer when they felt this effect, but they did not.

It may be observed from figure 1 that the best times for the first runs were obtained by all subjects during the last session regardless of the chemical taken: two of the subjects had taken amphetamine and the other two a placebo. The psychological effect of the knowledge that it was the last test was obvious. Although the average results obtained for the entire group are the same as those obtained in other treadmill experiments, there was a definitely different reaction on the part of one of the subjects. Subject 3 (figure 1) exhibited a deleterious effect of amphetamine. His drug times were shorter than the placebo times. The average drug time was only 284 seconds, whereas the placebo time was 357 sec-

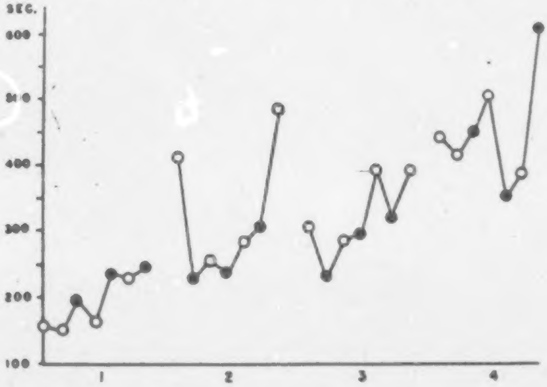

FIGURE 1.—Effect of amphetamine (20 mg taken one-half hour before test) on treadmill running time. Speed, 7.2 mph; angle of inclination, 5 degrees. (Solid dot, amphetamine; open dot, placebo.)

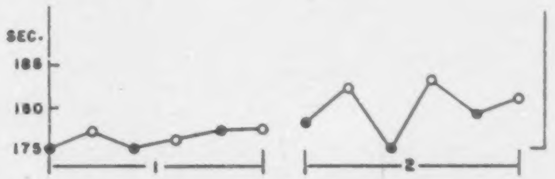

FIGURE 2.—Effect of amphetamine (20 mg taken one-half hour before the test) on speed of swimming 220 yd. Part 1 was obtained during the swimming season and part 2 after season. (Solid dot, amphetamine; open dot, placebo.)

onds. Unfortunately this subject was not available for further experimentation. Subject 2 showed a puzzling behavior occasionally observed in experiments involving endurance testing and not related to the chemicals consumated. His first and last runs were the best. Since the improvement in the last run had psychological reason, a similar interpretation may be suggested regarding the first run.

Swimming.—Tests were made with 10 mg. of amphetamine given to 11 subjects one hour before swimming 100 yd. The average time for the first swim was 62.34 seconds with the drug and 62.33 with the placebo. For the second swim the times were 62.81 and 63.20 seconds respectively (see table). Analysis of variance showed that these differences were not statistically significant. Thus no beneficial or deleterious effect of amphetamine was observed on either the speed of swimming or recuperation from fatigue.

Tests were also made with 20 mg. of amphetamine given 30 minutes before swimming. Nine subjects swam 440 yd. The average drug time was 311.6 seconds and the placebo time 311.0. Two groups of subjects swam 220 yd. In one group, consisting of 16 men, the average drug time was 168.62 seconds and placebo time was 169.64 seconds. In the second group, consisting of 11 men, the times were 151.2 and 151.6 seconds respectively. Statistical analysis showed that the difference between each pair of figures was not statistically significant.

Inspection of the time graphs made for each subject showed that there were three subjects whose speed was increased by the amphetamine. Figure 2 shows a time graph prepared for one of these subjects. This graph consists of two parts. Part one was obtained when the subject was at the peak of condition. During this period, one can see a trend. The two fastest times were made with the drug during part two, after the swimming season was over, and the subject's speed fluctuated eight seconds instead of two seconds as in part one. The effect of amphetamine was observed each time he took the drug. The second man, a much faster man whose time varied from 143 seconds to 146 seconds, swam faster each time he took amphetamine. Without the drug, his average time was 146 seconds; with the drug it was 143.3 seconds. One subject swam 440 yd. faster each time with amphetamine than with placebo. This average drug time was 301.6 seconds, and placebo time was 303.3 seconds. His swimming time for 220 yd., however, was not affected.

Track Running With Amphetamine Taken One Hour Before Test.—Nine varsity men were tested six times, after taking 10 mg. of amphetamine, each in time trials for 220-yd. runs. The average running time after taking amphetamine was 25.13 seconds and after taking the placebo 25.15. Analysis of variance showed that there was no statistically significant difference between the times.

Competitive Track Runs.—Twelve men made 65 runs in seven events: 100 yd., 220 yd., 220 yd. with low hurdles, 440 yd., ½ mile, 1 mile, and 2 miles. If the time of running after taking the placebo is given a value of 100%, the average time of running after taking the drug is 99.4%. The best time was made 11 times with the drug and only 9 times with the placebo. There were two ties. This observation, however, cannot be accepted as even an indication of a trend.

An inspection of the individual time graphs shows a disturbing fact (fig. 3). Some runners showed a consistent improvement in speed and some a consistent deterioration in performance regardless of the chemical taken.

Looking at the 100-yd. record, one may assume that this man improved under the influence of the amphetamine. The 440-yd. man improved also, even though before his second run he received the placebo. The half-miler kept on improving while getting placebos, and one may suppose that he would have improved during his last run if the placebo instead of amphetamine had been given (as happened with the last two-miler). The first two-miler's performance became steadily worse in spite of or because of amphetamine.

Comparison of weather and track conditions with the records failed to show any relation. If by chance tests were made only on subjects 1, 3, or 5, conclusions could be drawn that amphetamine increases the speed of running. The graphs 4 and 6 in figure 3 will make one wonder. It is quite possible that these steady changes in performance are not related to the effect of the drug at all.

SUBJECTIVE REPORTS

Subjects were asked to report any unusual sensation, comfortable or otherwise, and whether they slept well or not. When 10 mg. of amphetamine was given, the placebo was blamed or praised as often as the drug. When 20 mg. was given, the subjects were 75% correct in guessing when they had been given the "pep pills."

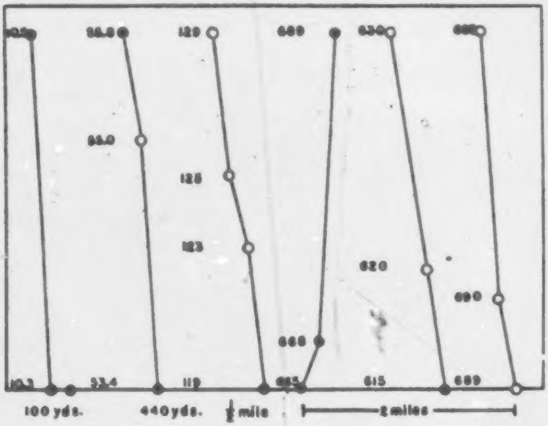

FIGURE 3.—Time graphs obtained during intercollegiate track meets. Running time of some subjects improved and that of some deteriorated regardless of the chemical taken. (Solid dot, amphetamine [20 mg., one hour before the run]; open dot, placebo.)

Some complained of difficulty sleeping. The latter was remedied equally well by a sedative or another capsule of placebo. The four subjects in the special treadmill group usually guessed correctly when amphetamine was administered. In this group there was a man from India who had never taken any drugs in his life and was at first reluctant to join in the experiment. He could always guess correctly whether it was a drug or a placebo that had been taken. However, this did not affect his running time.

COMMENT

During the experiment subjects did not know what drug was being investigated. Their guesses ranged from amphetamine to tranquillizers. The medication schedule was adhered to strictly except in one instance when a man, after taking the drug, ran half an hour later than scheduled. When, on one occasion, trackmen did exceptionally well, they begged for more of the "miracle pills." Subsequent examination of records revealed that some of these "miracle pills" were placebos.

Examination of individual records of competitive runs shows that for no known reason some athletes steadily improved and some steadily declined in proficiency during the last three meets. If, by chance, only certain men had been used in this study, results could have been either definitely in favor of or definitely against amphetamine.

Four subjects in the special treadmill group gave their best performance during the last test. It was fortunate that two of them had received amphetamine and two the placebo. If they all had received the same chemical, interpretation of the results would have been more difficult.

There are other stumbling blocks which may be encountered. On one occasion, a subject improved his endurance 88% (from 402 seconds to 756 seconds) after taking 10 mg. of amphetamine. However, a few days later another man, running after taking 10 mg. of placebo, improved his endurance more than 132% (from 860 seconds to 2,000 seconds). He ran on three more occasions, twice with the drug and once with the placebo, but his time never surpassed 958 seconds. This particular man was a good distance runner and very cooperative.

He could not offer any acceptable explanation of his phenomenal run. Such unusually long running times immediately arouse a suspicion that these two men were not always running to the limit of their ability, a suspicion easily aroused when tests depend on maximum voluntary performance. However, there was no other tangible evidence on which to suspect these two subjects of shirking their pledges, and they were retained in the experiment.

Observations similar to this have been made by me during other experiments involving endurance. No suitable explanation has ever been found.

The results obtained during track contests were different from those obtained on the same men during the 220-yd. trials. Whereas during the trials no effect on performance was discovered, the data obtained during athletic competitions could be interpreted in a manner fitting the fancy of the interpreter. All reports regarding the ergogenic action of chemicals obtained from studies of single individuals or small groups should be regarded with extreme caution. It is also advisable to plot performance graphs for each shubject, so that any unusual reaction can be discovered immediately and followed up with additional tests.

SUMMARY AND CONCLUSIONS

In an investigation of the effect of amphetamine sulfate on the athletic performance of 54 male college students, the drug was given in doses of 10 and 20 mg., either one hour or one-half hour before the test. Activities used were as follows: running to exhaustion on a treadmill twice in succession with a 10-minute rest in between, running 220-yd. track trials, running distances from 100 yd. to 2 miles under competitive conditions, swimming 100 yd. twice in succession with a 10-minute rest in between, and swimming 220 and 440 yd. Altogether 532 tests were statistically analyzed. All subjects but four showed neither beneficial nor deleterious effects of 10 or 20 mg. of amphetamine. Three of the four subjects definitely improved in swimming 220 yd., while one improved in swimming 440 yd. One treadmill subject showed a deleterious effect of amphetamine. He ran longer after taking the placebo than after the amphetamine. Thus, three of the subjects were definitely benefited by the amphetamine, and one man was affected deleteriously. All these men received 20 mg. of amphetamine.

APPENDIX 17

THE INFLUENCE OF AMPHETAMINE (BENZEDRINE) SULFATE, D-DESOXYEPHEDRINE HYDROCHLORIDE (PERVITIN), AND CAFFEINE UPON WORK OUTPUT AND RECOVERY WHEN RAPIDLY EXHAUSTING WORK IS DONE BY TRAINED SUBJECTS

(By E. E. Foltz, M.S., M.D., A. C. Ivy, Ph.D., M.D., and C. J. Bardorka, M.S., M.D., D.Sc., Chicago, Ill.)

(Journal of Laboratory and Clinical Medicine, pp. 603–606)

INTRODUCTION

Since it was found by Foltz, Schiffrin, and Ivy [1] that practice or training overshadowed any effects that amphetamine and caffeine mayhave exerted on the work output of untrained subjects doing rapidly exhausting work, this study on trained subjects was undertaken. It has been shown that caffeine increases the rate of recovery from exhausting exercise in trained subjects.[2]

METHODS

Four medical students were used. They were provided with board and room in a hospital near the laboratory. Their food intake was under control; their diet was adequate in all known components, a certain variation in the selection of food items being permitted. The subjects were chosen on the basis of their willingness to cooperate, and not on the basis of muscular development, the work of the tests being their only source of physical exercise. The double work periods occurred on Monday, Wednesday, and Friday afternoons at the same time between 2 and 4 o'clock. The subjects worked on the bicycle ergometer described by Kelso and Hellebrandt,[3] at a rate of 1,235 kilogram meters (kg.m.) per minute, with a pedaling rate of 54 r.p.m.

The periods of training of the subject prior to performing these tests varied from three to sixteen months. The subjects worked to complete fatigue, rested ten minutes, and then worked to complete fatigue again.[2] The end point of fatigue was the point at which they could no longer hold the needle on the dial at the rate of 54 r.p.m.

The amphetamine (10 to 15 mg.), desoxyephedrine (5 mg.), and caffeine sodium benzoate (0.5 Gm.) were always administered intravenously. They were given at various times (thirty seconds to 30 minutes) prior to the first work period to determine their effect upon work output, and amphetamine and desoxyephedrine were given immediately after the first work period to determine their effect upon recovery, as measured here, from fatigue. The effect of caffeine upon recovery is reported elsewhere.[2] Placebo injections (sodium chloride solution) were given at random as controls. All solutions were colorless. The drugs were given intravenously to obtain rapid action, and because this group of subjects had previously obtained various therapeutic agents by a similar route to control the rate of absorption.

RESULTS

Various subjective sensations were reported by the subjects. After the injections of amphetamine, two subjects felt definitely "keyed up," and both experienced more leg pain during and after the work periods. The other two subjects reacted identically to both placebo and amphetamine. Desoxyephedrine seemed to increase the leg pain in one, to decrease it in another, and to cause insomnia in three subjects. In one case, when it was given immediately after the first period, it seemed to dispel fatigue. This sensation of being rested would last until he had worked for about ten seconds in the second period, when he would begin to feel as tired as though he had only had a placebo injection, and his recovery was not enhanced. This is in contrast to the response of this subject to 0.5 Gm. of caffeine sodium benzoate, given in the same manner.[2] This drug would also stimulate the subject, but the stimulation would last throughout the second period, and greatly increase his recovery. After being given either desoxyephedrine or caffeine for the rest of the day this subject would feel extremely alert, and would experience difficulty going to sleep at night. One subject complained of weakness and giddiness following the first work period, after having received desoxyephedrine prior to working, and one reported no sensations from the desoxyephedrine. All four subjects reported definitely stronger immediate subjective sensations from the caffeine and desoxyephedrine when the drugs were given before the first period than when they were given after the first.

The results obtained by giving the drug before the first period are shown in Table I. It is evident that the amphetamine had no significant effect. However, desoxyephedrine and caffeine definitely increased the work output. With the increase of work done in the first period, the expected decrease in per cent recovery occurred.[1]

The results obtained by giving the drug immediately after the first period are shown in Table II. In the case of amphetamine it appears that the work output was enhanced. However, if this were true, the increment would be in the second period work output and the per cent recovery would be higher than that of the controls. Because these qualifications are not fulfilled, no effect can be attributed to amphetamine. In the case of desoxyephedrine the per cent recovery was increased over that of the controls. However, if this were significant, certain other data shou'd be present; namely, the first period work output of both the desoxyephedrine and the control series would be approximately the same, or that of the desoxyephedrine would be more; the second period and total work outputs would be significantly increased in the case of the desoxyephedrine. Since such is not the case, it cannot be said that desoxyephedrine significantly increased recovery.

TABLE I.—DRUG GIVEN BEFORE THE 1ST PERIOD

Substance	Trials	Subjects	Dose in mg	1st period work output (kg.m.)	2d period work output (kg.m.)	Total work output (kg.m)	Percent recovery
Amphetamine	10	2	10-15	4,570	2,862	7,432	63
Control[1]	10	2		4,793	3,117	7,910	66
Desoxyephedrine	12	4	5	8,870	5,750	14,620	66
Control[1]	12	4		7,055	5,105	12,160	72
Caffeine	6	4	500	5,805	3,911	9,716	66
Control[1]	6	4		5,201	3,667	8,868	70

[1] Variations in the work outputs of the several control series result from different stages of training.

TABLE II.—DRUG GIVEN IMMEDIATELY AFTER THE 1ST PERIOD

Substance	Trials	Subjects	Dose in mg	1st period work output (kg.m.)	2d period work output (kg.m.)	Total work output (kg.m.)	Percent recovery
Amphetamine	17	4	10	6, 764	4, 167	10, 931	63
Control[1]	17	4		6, 478	3, 931	10, 409	62
Desoxyephedrine	31	4	[2] 5	6, 660	4, 692	11, 352	70
Control[1]	31	4		6, 790	4, 510	11, 300	66

[1] Variations in the work outputs of the several control series result from different stages of training.

[2] In 6 trials less was used.

SUMMARY

The effect of amphetamine, desoxyephedrine, and caffeine upon work output, and the effect of amphetamine and desoxyephedrine upon recovery in subjects doing rapidly exhausting work have been observed. All three drugs stimulated some of the subjects mentally, so that they felt "keyed up" and more alert. The immediate subjective sensations resulting from desoxyephedrine and caffeine were much more pronounced when the drugs were given to a nonfatigued subject than when given to a subject following exhaustion. Amphetamine did not enable the subjects to work longer, nor to recover more rapidly. Desoxyephedrine did enable the subjects to work longer, when it was given before work began, but it did not hasten recovery when given to the exhausted subjects. Caffeine also enabled the subjects to work longer and, in addition, hastens recovery when given to exhausted subjects.[2]

CONCLUSIONS

As measured by this method:

1. Ten to 15 mg. of amphetamine injected intravenously do not increase work output in the trained subject doing rapidly exhaustive work.
2. Five milligrams of desoxyephedrine injected intravenously into the nonfatigued subject increase work output.
3. One-half gram of caffeine sodium benzoate injected intravenously into the nonfatigued subject increases work output.
4. Neither 10 mg. of amphetamine nor 5 mg. of desoxyephedrine injected intravenously into the fatigued subject actually enhance the rate of recovery from heavy work carried to the point of "exhaustion"; caffeine in adequate doses does.[2]
5. When stimulants are employed, they should be chosen according to whether it is desired to increase the work output of unfatigued subjects, or to enhance the recovery of fatigued subjects.

The drugs in some instances definitely improve subjective feeling tone and cause the subject to feel as though he can and is actually doing more work.

It should be remembered that the foregoing observations pertain only to rapidly exhausting work, and not to the type of work performed during a march or while standing guard.

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APPENDIX 18

AN IMPROVED METHOD FOR DETECTION OF SOME STIMULANTS, ANTIHISTAMINES AND LOCAL ANAESTHETICS IN URINE FROM ATHLETES

(By J. W. Steele, M. Bolan and J. K. Eyolfson)

(Canadian Journal of Pharmaceutical Sciences, Vol 5, No. 4, 1970)

ABSTRACT

A rapid GLC screening method is described for the detection of certain common stimulants, antihistamines and local anaesthetics in urine samples from

athletes. The method permits rapid identification of the chemical bases and their derivatives on a single column and can be used by laboratories possessing only one gas chromatograph equipped with a linear temperature programmer.

INTRODUCTION

Considerable attention has been focused on the misuse of stimulant drugs by athletes in recent years and Beckett *et al* (1) have published a general scheme for the detection of such drugs in urine samples. The method is based largely on gas-liquid chromatography (GLC) and there are other references in the literature to analyses of a similar nature, on biological samples or pharmaceutical preparation (2–14).

The present authors have had considerable experience (15, 16) in applying the Beckett scheme of urine analysis and while it certainly does work well, it is time consuming and has been found to have some defects in certain practical situations. For example, Beckett's method uses two columns for the initial screening stage and requires a total of one hour running time on two gas chromatographs. When dozens of samples are to be analyzed or when results are needed within a few hours, this method becomes impractical and a more rapid system is essential. Also, many other unnatural substances may be present in the urine samples and little information is readily available which correlates elution times for stimulants with those of other likely drugs, such as local anaesthetics and antihistamines. These other substances are either not eluted from Beckett's columns or are eluted and may be confused with stimulants. On several occasions, the present authors have found unnatural substances in urine samples, which required considerable investigation before they were identified as antihistamine drugs. The upper temperature limits imposed on Beckett's A and B columns would prevent elution of many drugs of these suggested types in any reasonable time. It should be noted that any GLC screen should cause elution of all likely drugs in as short a time as is compatible with good analysis technique, since there may be large numbers of urine samples on hand for testing.

EXPERIMENTAL

A Beckman Model GC4 and Varian 1840 gas chromatographs, both equipped with flame ionisation detectors and a temperature programmer, were used in this study. The recorders were 10 inch linear potentiometric recorders set to a range of 1 mv full scale deflection (fsd). Both helium and nitrogen were used as carrier gas, with no detectable difference in performance.

The columns investigated are listed in Table I. The column packings were prepared by adaptation of a method recommended by Johns-Manville (17) and a description of the preparation of packing number 5 (Table I) will serve as an example. Reagent grade potassium hydroxide (5 g) was dissolved in methanol (100 ml) and the solution was filtered. The filtrate was stirred with 15 g of Chomosorb G, AW/DMCS, 60 80 mesh, for several minutes. After filtration, the amount of potassium hydroxide absorbed was calculated from the volume of filtrate obtained. The wet packing was transferred to a fluid-bed drier (Applied Science Labs Inc.) and dried in a stream of dry preheated nitrogen. The dry packing was stirred with a solution of Apiezon L (7.5 g) in toluene (75 ml) for five minutes. This mixture was then vacuum filtered and dried as before and the percentage of Apiezon L in the packing was again calculated from the volume of filtrate.

Temperature Programmes

1. For the Carbowax 20M column, the temperature was held at 95° for 7 minutes, raised to 155° at 4.5° per minute and held there until all components were eluted.
2. For the Apiezon L/KOH columns, the temperature was held at 138° for 6 minutes, raised to 275° at 6° per minute and held there until all components were eluted.
3. Where retention times on programme number 2 were excessive or for determining the retention time of derivatives, the programme could be altered so that the isothermal portion was omitted and the temperature then rose at 6° per minute from 138° to 275°.

Test Solutions

During development of the programmes, suitable solutions in either of stimulant, antihistamine and local anaesthetic bases were prepared from the available salts. Nicotine, nikethamide, ephedrine, benzocaine and xylocaine were available as the free base and were used directly as ether solutions.

Urine samples were extracted as described by Beckett *et al.* (1) in "Extraction Procedure A". A Hamilton 0–25 µl syringe was used to inject 5µl of the ether extract concentrate into the flash inlet of the chromatograph, at a suitable sensitivity setting, usually 16 x 10^{-10} amps fsd. Retention times were recorded relative to purified quinoline. Reagent grade diphenylamine was also found to be satisfactory as a reference for compounds which had longer retention times.

RESULTS AND DISCUSSION

The Screening Procedure

Preliminary work with the SE–30, OV–1 and OV–101/KOH columns showed that all three caused excessive tailing of peaks for test compounds. While tailing was reduced by using glass columns instead of stainless steel, the other packings proved to be superior and no further work was done with these three columns.

It was obvious that a temperature programme would be required to cause elution of all of the compounds in this study. Figure 1 shows the chromatogram obtained when a mixture of stimulants was injected onto the Carbowax 20M column, using programme number 1. The retention times obtained correlate well with those of Beckett but the column was considered to be unsatisfactory for programming, since the upper temperature limit is too low and many higher molecular weight compounds were not eluted. Amphetamine, methylamphetamine, ethylamphetamine and phentermine had very nearly the same retention time and appeared as a single peak in the chromatogram of the stimulant mixture.

The 5% Apiezon L/4.5% KOH column was prepared in an attempt to improve upon Beckett's "D" column (10% Apiezon L/10% KOH), which has much too long retention times at his isothermal setting of 155°, for many of the compounds in this study. Apiezon L has an upper temperature limit of 300° and is more useful for programming than Carbowax 20M. The results obtained are shown in Figure 2 and Table II.

The choice of stainless steel or glass tubing for the Apiezon L/KOH column did not appear to be critical except for ephedrine, diethylpropion and phenoxypropazine. Beckett reported some problems with diethylpropion and phenoxypropazine and Parker, Fontan and Kirk (18) found that ephedrine pseudoenhedrine and phenylpropanolamine decomposed upon treatment with base. The same packing in a glass column gave increased detector response for all of the substances tested and particularly for ephedrine and diethylpropion which now showed only minor signs of decomposition. Phenoxypropazine did not give a satisfactory chromatogram with this system. The use of glass columns is therefore recommended, to avoid any possible confusion with decomposition peaks on chromatograms.

TABLE I.—GLC COLUMNS AND SPECIFICATIONS

Number	Column material	Liquid phase	Solid support	Oven temperature (°C)	Carrier gas	Flow rate of carrier gas (ml/min)
1........	Stainless steel, 3m x ⅛″ o.d.	2.5 percent SE–30...	Chromosorb G, AW/DMCS, 80-100 mesh.	80........	He........	30
2........	Stainless steel, 6 ft x ⅛″ o.d.	3 percent OV–1......	Chromosorb G, AW/DMCS, 80-100 mesh.	200......	He........	36
3........	Stainless steel, 6 ft x ⅛″ o.d.	5 percent OV–101, 5 percent KOH.	Gas-Chrom Q, AW/DMCS, 80-100 mesh.	150......	He........	36
4........	Stainless steel, 1 m x ⅛″ o.d.	2 percent Carbowax 20 M, 5 percent KOH.	Chromosorb G, AW/DMCS, 80-100 mesh.	95–155...	He........	30
5........	Stainless steel, 6 ft x ⅛″ o.d.	5 percent Apiezon L, 4.5 percent KOH.	Chromosorb G, AW/DMCS, 60-80 mesh.	130–275..	He........	36
6........	Glass, 6 ft x 2 mm i.d.	5 percent Apiezon L, 4.5 percent KOH.	Chromosorb G, AW/DMCS, 60-80 mesh.	130–275..	N_2........	30

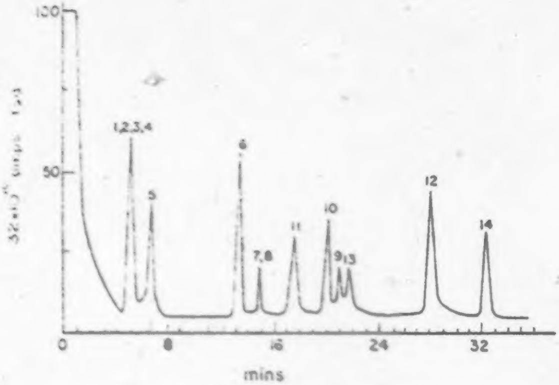

FIGURE 1.—Chromatogram of a mixture of stimulant compounds on a Carbowax 20M column

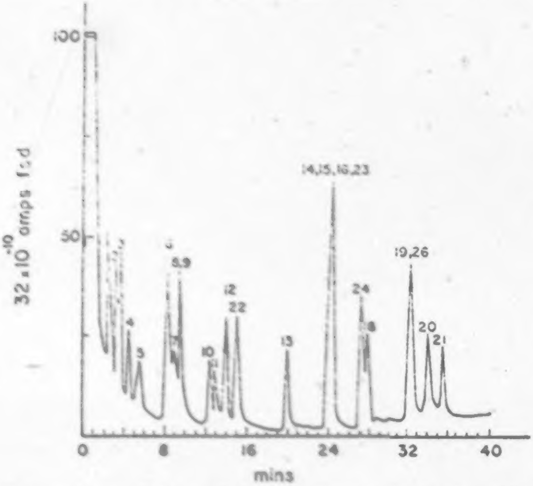

FIGURE 2.—Chromatogram of a mixture of some stimulant, antihistamine and local anaesthetic compounds on an Apiezon L/KOH column

TABLE II.—RETENTION TIMES ON APIEZON L/KOH COLUMN

Compound	Number	Relative retention times		
		Programme number 2	Programme number 3	Acetyl derivatives on programme number 3
Stimulants:				
Amphetamine	1	0.44	0.52	1.80
Phentermine	2	0.54	0.62	1.78
Methylamphetamine	3	0.60	0.68	2.18
Ethylamphetamine	4	0.77	0.82	2.38
Mephentermine	5	0.93	0.94	2.28
Nicotine	6	1.33	1.24	NF
Methoxyphenamine	7	1.44	1.24	3.04
Chlorphentermine	8	1.55	1.38	2.88
Ephedrine	9	1.55	1.38	3.02
Phenmetrazine	10	1.90	1.70	3.20
Phendimetrazine	11	2.02	1.80	NF
Nikethamide	12	2.14	1.89	NF
Fencamfamin	13	3.01	2.84	3.30
Benzphetamine	14	3.60	3.54	NF

TABLE II.—RETENTION TIMES ON APIEZON L/KOH COLUMN—CONTINUED

Compound	Number	Relative retention times		
		Programme number 2	Programme number 3	Acetyl derivatives on programme number 2
Antihistamines:				
Dimenhydrinate	15	3.64	3.56	NF
Diphenhydramine	16	3.64	3.56	NF
Tripelennamine	17	4.09	4.09	NF
Chlorpheniramine	18	4.19	4.23	NF
Mepyramine	19	4.94	5.14	NF
Chlorcyclizine	20	5.20	5.47	NF
Promethazine	21	5.43	5.75	NF
Local anaesthetics:				
Benzocaine	22	2.33	2.10	4.26
Xylocaine	23	3.60	3.67	NF
Procaine	24	3.98	4.08	4.21
Piperocaine	25	4.06	4.17	NF
Amethocaine	26	4.73	5.04	5.33

Notes: Retention time of Quinoline = 6.92 minutes on programme No. 2, = 5.42 minutes on programme No. 3; retention time of Diphenylamine = 19.01 minutes on programme No. 2, = 13.88 minutes on programme No. 3; carrier gas flow rate at outlet = 30 ml/min; column temperature (start) = 238°; inlet temperature = 245°; detector temperature = 315°; NF = not formed.

Figures 3, and 4 and 5 are representative chromatograms obtained from the urine extracts of volunteers who had taken methylamphetamine, phendimetrazine and ephedrine respectively. Figures 3 and 4 show the presence of the expected metabolic and nicotine in each case, as well as unchanged drug. Figure 5 shows a typical ephendrine chromatogram with this system.

The common antihistamines and local anaesthetics listed can be readily detected in a single 35-minute programme (number 2) or in even less time on programme number 3. Cocaine was not detected at all with either programme and cinchocaine (not listed) had a retention time of about 52 minutes. Quinoline was used as the internal marker.

The urine screening procedure here prescribed has the advantage of indicating on a single chromatogram, the presence of a wider range of drugs than other published systems and should be of value in eliminating the need to report unidentified abnormal urinary constituents to sports authorities during drug testing schemes on athletes (15, 16). The procedure could also be adapted as a fast preliminary screen by raising the temperature very quickly from 140° to 275° (at say, 30° per minute) and eliminating all urine samples which had no peaks. Only those with positive peaks would then require more careful examination by the programmes described. When an abnormal constituent has been detected, the final confirmatory analysis, should be done by using which ever of Beckett's columns seems most appropriate. This ultra-rapid screen could be of immense value in heats of athletic events, if results are required before the next level of heats is run.

The Apiezon L/KOH column is satisfactory for GLC of derivatives as well as the parent bases. The acyl derivatives are readily made by injecting the urine extract suspected of containing a drug with one syringe, followed by immediate injection of a few microlitres of the reagent anhydride. The temperature programme may again be adjusted as found necessary. Programme number 3 was used for derivatives.

Conflict between urine collection time and convenience

Where drug testing is to be done in athletic contests, it is customary for urine samples to be collected from participants immediately following the event. Practical difficulties have arisen where a competitor has evaded officials and left the area, where there was no suitable private location in which samples could be collected or when officials decided that an individual should be tested after he had gone home. The commonest problem encountered by the authors was the inability or unwillingness of certain athletes to pass urine for the test. It is quite common for an athlete to become dehydrated under extremely competitive conditions and be incapable of spontaneous micturition. Some athletes have also become uncomfortable under the required scrutiny of officials and found difficulty in providing a sample.

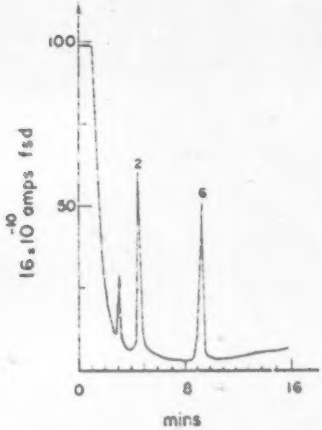

Figure 3.—Chromatogram of urine extract from a tobacco smoking volunteer taking Methylamphetamine.

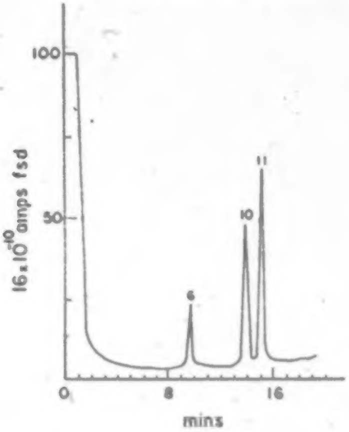

Figure 4.—Chromatogram of urine extract from a tobacco smoking volunteer taking Phendimetrazine.

The excretion/time graphs for drugs such as amphetamine are well known (19–21) but seem to be ignored when the urine collection system is organized or when any of the above difficulties are encountered. Urine collected too soon after administration may contain relatively little drug while urine collected hours later should show easily detectable amounts. In this study, the urine extracts from all volunteers who were given a single 5 mg. tablet of amphetamine or methylamphetamine or a 35 mg. tablet of phendimetrazine showed easily detectible amounts of the drug after 24 hours. Some of the urine samples taken 48 hours after administration of the above drugs were also positive. When a 10 mg. dose of methylamphetamine was given, all volunteers were positive after 48 hours and one was positive after 72 hours. Athletes who do use drug aids tend to take fairly high doses and when this is taken into account, there is no doubt that urine samples taken at any time up to 24 hours after the event will contain detectable amounts of the common stimulants. In some instances, it may prove disadvantageous to take urine samples too quickly. In a study on the excretion of

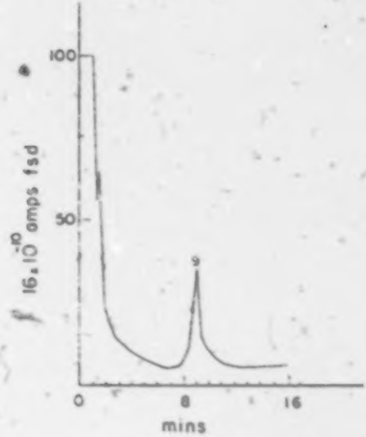

Figure 5.—Chromatogram of urine extract from a non-smoking volunteer taking Ephedrine.

fencamfamin, Skura (22) found that the drug was scarcely detectible until several hours after administration of a single dose (10 mg.) orally. At higher dosage levels, the unchanged drug was detectible sooner and persisted for 72 hours in urine.

It is obviously most convenient to collect urine samples before competitors disperse from the arena of competition but it should be remembered that it is not biologically essential to do so and later collection does not invalidate the testing scheme.

Some authors (1, 19, 23, 24) have drawn attention to the fact that urinary excretion of drug bases may be greatly reduced and their detection consequently made much more difficult, when the urine is alkaline. These authors point out that athletes normally excrete acid urine and alkaline urine would be immediately suspect. The potential problem could be overcome by a routine pH test at the time of collection. Where an alkaline urine sample was obtained, the athlete could be asked to provide a sample much later (up to 24 hours) and this should help in determining whether or not the athlete was deliberatly rendering his urine alkaline and whether or not he had taken a drug.

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APPENDIX 19

COMMENTS

[From the Medical Journal of Australia, Jan. 8, 1972]

THE DOPING OF ATHLETES

The taking of drugs to stimulate athletic performance in humans is fortunately of little significance in comparison with the doping of horses and dogs. Nevertheless, it is a matter of which those responsible for the organization of major athletic events have to take cognizance, and athletic associations are rightly jealous of their good name in this regard. There is no doubt that from time to time individual athletes have resorted to drugs of various kinds in an effort to boost their athletic performance, though whether they have ever significantly improved their results by doing so is another matter. The practice is unquestionably highly undesirable as being both against the interests of true sport and potentially dangerous to the health of those who take these drugs.

The Medical Commission of the British Commonwealth Games Federation has recently published a report on the steps taken to prevent and detect drug taking at the Ninth British Commonwealth Games, held in Edinburgh in 1970. There were no startling revelations, but it is an interesting account of the measures considered necessary to ensure against such practices. It begins with the statement that two groups of drugs have to be considered in this respect—substances acting on the nervous system, particularly the sympathetic amines, and anabolic steroids.

The sympathetic amines comprise amphetamines and related drugs, and the report opens with a review of the evidence as to their effect on performance. This is very conflicting, some investigators claiming to have detected a measurable improvement in performance, but several extensive trials by other workers have failed to show any consistent effect on performance in running on the track, treadmill running and swimming. One group, using both trained athletes and untrained students, found that 15 mg of amphetamine had no significant effect on all-out treadmill running, but that recovery was retarded by the drug. The Commission suggests that the lack of consistency in results indicates that any beneficial effect is probably marginal and therefore difficult to detect. They comment that these experiments do not reproduce the conditions in major competitive events, and that the action of a drug such as amphetamine superimposed on the intense physiological stimulation associated with an actual event is unknown; it may be that under these conditions the athlete may be under near maximal stimulation, so that the possibility of any further response may be negligible. Nevertheless, those trials which have been claimed to show an improvement in performance are naturally those which have gained most attention, and it is always possible that some athletes may be tempted to try these drugs. The fact that sympathomimetic amines and their metabolites can be readily detected in urine is therefore fortunate.

On the subject of the anabolic steroids the Commission is guarded. It is noted that attempts have probably been made to take advantage of their action, especially in field events such as weight-lifting, but there is no reliable evidence of this. There is also an absence of information on their pharmacological action if taken by healthy young adults over an extended period, except that they would be likely to have some virilizing action in females. It is admitted that their detection would be difficult.

As regards the measures taken to check any possible abuse of this sort at the Commonwealth Games, these included: (i) a signed declaration by each competitor that he or she did not indulge or intend to indulge in "doping", and that he or she would agree to submit to any test or examination by qualified medical personnel appointed by the British Commonwealth Games Federation; (ii) the issuing to each competitor of a statement about substances considered as dope; (iii) random selection of competitors from the heats and finals of athletics and other events (in addition, medal winners in cycling events were taken routinely). Those selected were asked immediately after their event, to pass a specimen of urine under the supervision of a male or female nurse. Most competitors were able to urinate immediately; with one exception, who had apparent anuria for 17 hours after the event, all others were able to oblige within an hour or two, after changing and having a drink of water. It is stated that the attitude of competitors on being selected to provide a specimen of urine was invariably most cooperative, and many expressed their approval that such tests were carried out.

Most of the larger teams had their own medical officers, and these were asked to notify the chairman of the Medical Commission, on a form provided, if any substance that might possibly be regarded as "dope" had been prescribed for or issued to an athlete, before the event in which the subject was due to compete took place. From a total of 1,289 competitors, 115 samples of urine were collected, as well as three samples from a control subject (not a competitor) who had taken known quantities of various drugs. The only specimen from a competitor to call for comment was one containnig phenylpropanolamine; reference to the medical records showed that a nasal decongestant containing this drug had been prescribed for the competitor in question and correctly notified two days earlier, and this explanation was accepted without reservation.

In conclusion, the report states that it is believed that the practice of taking stimulant drugs before athletic events was prevalent six years previously, but that the introduction of random testing of competitors has greatly reduced its incidence. The Medical Commission finds encouragement in the attitude of the athletes themselves, who were unequivocally opposed to drug taking in sport and strongly welcomed the testing.

PREVENTING DRUG REACTIONS

There is no dispute about the efficacy of modern drugs. However, there has been continuous concern for some years about the formidable incidence of unwanted side effects of drug therapy, or drug reactions, sometimes serious enough to lead to hospital admission or to prolong the stay of a patient already in hospital. The incidence of these more serious reactions has been estimated by both Melmon[1] and Doll[2] to be about 5 per 100 courses of drug therapy.

Reducing this incidence is of increasing importance as the number, range and potency of available drugs increase. Drug reactions may be due to an individual immunological response to a standard dose; sometimes such a response may be elicited by only minute doses of the drug, while occasionally the response may be dose-related. The only preventive measure which can be taken is to specifically ask the patient about abnormal reactions to drugs in the past; if there is such a history, it is most important to determine possible allegenic relationship to the drug it is proposed to administer.

Other drug reactions may be due to overdosage—either absolute or relative when the patient's age, weight, hydration or renal function has not been taken into sufficient consideration. Another cause of drug reactions is related to the drug metabolism in the body or due to drug interaction, both of which may produce unexpected and even bizarre effects. The hypertension produced by the interaction of cheese and monoamine oxidase inhibitors is a good example; to predict and hence to avoid these, a considerable knowledge of pharmacology is necessary, especially in these days of polytherapy. In most cases these interactions are not reported until after the drug has been in use for some time. Doll stresses the importance of listening to the patient; while it is natural to assume that the drug has been proved safe before being released for marketing, no evaluation procedures can exclude all the possible drug and metabolic interactions, and hence it is important to report these, even when cause and effect relationship is tenuous.

Prevention can only follow a much wider appreciation of the problem. It is asserted that too many drugs are being prescribed by the medical profession, sometimes by several doctors for the one patient, often without real clinical justification, that too many people are administering drugs to themselves without medical supervision, and that drugs are administered for unnecessarily lengthy periods. How far these generalizations are true is debatable, but they are warning lights. When a drug is indicated, the physician should review what drugs the patient is already taking and then prescribe the additional drug with a definite goal in mind—achieving the best result with the lowest dosage over the shortest possible period. When a drug needs to be administered over a long period—such as digitalis—then the patient should be educated in the possible side effects so that he can reduce dosage if necessary. The physician also should be flexible, altering the dose according to the patient's response, not only lowering the individual dose but lengthening the interval between doses. Modern intermittent chemotherapy regimens in the treatment of tuberculosis are evidence that for nearly 20 years the dosage and frequency of doses of antituberculosis drugs have been unnecessarily high.

Finally, some drug reactions are the inherent result of brinkmanship between maximum efficacy and minimal toxicity. The physician weighs carefully the risk in each patient and proceeds according to his judgment, maintaining and aggressive awareness for symptoms and signs of toxicity.

Both Doll and Melmon maintain that the vast majority of drug reactions are predictable and hence largely avoidable. This may be so in a teaching hospital unit where special interest is shown in this problem; probably less than half could reasonably be avoided in general practices. However, constant awareness of the problem, close supervision of the patient who "cannot take drugs", and prompt reporting of observed reactions to the Australian Drug Evaluation Committee should significantly contribute to a reduced incidence of drug reactions.

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APPENDIX 20

[From the Cincinnati, Ohio, Post and Times-Star, July 13, 1973]

Even Amateur Athletes Using Speed, Steroids

(By Ann McFeatters)

Washington.—Results of a heretofore unpublished study indicate use of drugs in athletics is widespread even among amateurs.

Dr. Donald Spencer, an orthopedic surgeon who also works with the National Association of Intercollegiate Athletics, (NAIA), told the Senate juvenile delinquency subcommittee in hearings ending today that in 1971 41 of 400 participants in a national indoor track meet voluntarily submitted to tests for drugs.

Of the 41 amateur athletes tested, 25 were found to have taken a drug. Four had taken amphetamines (speed).

Spencer said these results convinced the NAIA that its "head-in-the-sand attitude" toward drugs was not working. So it asked the government for $75,000 to test 3000 college athletes in 15 events in 1974. He said no athletes or colleges would be identified publicly and no one would be disqualified from competition because the tests would be for research only.

A. O. Duer, NAIA executive director, said no other athletic association has done any research on the extent of drug use by athletes because urine tests for drugs are expensive and there are few requirements for such tests in sports competition.

Other hearing witnesses agreed that no one knows the extent of the problem but no one denied there is one. Dr. Daniel F. Hanley, Bowdoin College physician and a member of the International Olympic committee's medical commission, said:

"I think the problem (of drug use among athletes attempting to improve their performance) is a very real one. But what we need is factual information."

Two college athletic directors who are former athletes, Jack Scott, of Oberlin College and Phil Shinnick at Rutgers University's Livingston College, testified at length to widespread use of drugs in sports.

Shinnick, a former long-jump All-American and member of the 1964 U.S. Olympics team, said drug use by athletes has been rising for 10 years. He said athletes are so used to popping pills, starting with vitamins, that they think nothing of using amphetamines or anabolic steroids used for weight gain and strength and virtually impossible to detect.

"This whole business of drugs in sports is a very secretive affair," he said, "and athletes guard new types of drugs that they are using against possible use by other competitors.

Scott said he was introduced to amphetamines by a trainer in a Southern college trying to recruit him as a track star. But he said he quit using them after two days. He described a friend who became an Olympics gold medalist as built like an Irish setter until he took anabolic steroids. Then he looked like a bulldog. After stopping the drug, Scott said the champion looked like a golden retriever.

APPENDIX 21

[From the Detroit, Mich., News, June 14, 1973]

NCAA PLANS TESTS FOR DRUGS

(By George Kentera)

WASHINGTON.—The National Collegiate Athletic Association will ask athletes in its regularly scheduled events, beginning this fall, to undergo voluntary urine testing for drug use—but one kind of widely used drug probably will escape detection anyway.

Moreover, the NCAA is moving toward a mandatory drug test for all competitors in its national championships, of which it holds about 30 a year. But that move, according to Louis Spry, NCAA assistant executive director, may not take place until 1974.

Urinalysis, according to witnesses here yesterday before the Senate subcommittee to investigate juvenile delinquency, will not show whether an athlete has been using anabolic steroids in an effort to increase both his weight and strength.

"There is no test yet for anabolic steroids," said Dr. Donald L. Cooper, team physician at Oklahoma State University and a member of the American Medical Association's Committee on Medical Aspects of Sports.

The lack of such a test could be significant. Another witness, Dr. Lawrence Golding of the School of Health, Physical Education and Recreation at Kent State University, said "the use of anabolic steroids is extremely common" among athletes.

"All top weight men are probably on anabolic steroids," he said, identifying weight men as shot putters, discuss throwers and other field event competitors, as well as football linemen, heavyweight wrestlers and some basketball players.

Golding and others said the second large category of drugs used by many modern athletes were the amphetamines, or pep pills, that would be detected by urinalysis.

The NCAA program of voluntary testing this fall, with no punitive steps, will cover a large area of intercollegiate athletics. The association has almost 700 member colleges and includes almost every major athletic conference around the country.

Robert W. Pritchard, chairman of the NCAA's Drug Education Committee, told the subcommittee—headed by Sen. Birch Bayh, Indiana Democrat—that the mandatory testing of all competitors in the association's championships, would begin this fall, not merely the voluntary testing in regularly scheduled NCAA events.

That would have meant required testing for participants in the NCAA indoor track championships that are held in March at Cobo Hall in Detroit and that are sponsored by the Detroit News.

But NCAA officials in Shawnee Mission, Kans., said Pritchard was slightly ahead of himself in the drug-testing program.

As it was explained by Spry from Mission, the basis of any mandatory action by the association will be 22,600 questionnaires that have been sent to student-athletes at 143 representative colleges. Those questionnaires will develop patterns of drug usage by college athletes, and will give the NCAA Council information on which drugs to place on a prohibited list.

A recommendation from Pritchard's committee to the Council must be forthcoming by next April, but could be made much sooner. At that point, Spry said, the Council could—and almost surely will—require the mandatory urinalyses of competitors in its championships.

Some of those championships, incidentally, are scheduled as follows: November-December—cross country, soccer, water polo; March—basketball, skiing, wrestling, swimming, fencing, gymnastics and indoor track; June—baseball, golf, lacrosse, tennis and outdoor track.

The first request for athletes to undergo voluntary urinalysis could come in conjunction with Big Ten football games this fall. Experts say that kind of testing could possibly show use of some other drugs, including heroin.

Alan Hart, head trainer at Ohio State University and the man who will train the United States team at the World University Games in Moscow this summer, told Bayh's subcommittee, "I know of no trainer, no team physician (in collegiate athletics) who is prescribing these medications."

But amphetamines are easily available, witnesses said. And Golding, who has done considerable research among Olympic athletes and American athletes at the upper competitive levels, said these performers told him, when their ononymity was guaranteed, that physicians supplied them with anabolic steroids.

Golding made two especially interesting observations.

One was that the very concern of the athletic establishment over the use of drugs convinced athletes that drugs could help their performances. The other was that young people view the taking of drugs much different than do their elders, including coaches.

"This concern and attempted control by authorities tends to make the athletes believe that there must be a definite advantage to the use of these drugs to merit the controversy that their use generates," he said of the first point. "As the bodies that control athletics become more dogmatic in their disapproval of drugs and more persistent in their efforts to curb their use, the athletes have become more certain that drugs must affect performance advantageously."

"Drug taking is not considered immoral, unsportsmanlike or dangerous by youth," he said of the second view. ". . . They are hard-working athletes who are looking for that edge in winning . . . the athlete feels he does not take amphetamines for the same reason the guy on the street does. He feels he is taking it for a performance, and that's all."

Dr. Cooper testified that amphetamines could not be shown to increase athletic performance, and he cited a study arguing the same result for the anabolic steroids. Golding agreed on amphetamines. But on the steroids, he said, four studies showed they did not help weight and strength development, thus indicating they had no place in athletics, but that six studies reported "significant improvement in weight, strength and muscle size."

And while Dr. Cooper said the steroids, when used by normal men, had been associated with atrophy of testicles, loss of sexual drive and loss of hair, Golding said athletes looked around them at those competitors who were using steroids and saw that these things didn't happen.

"They're aware of who is taking what," he said, "and they're aware this is more a scare campaign than anything else."

Use of steroids would not show in a urinalysis, Golding said, because they are used for period of time—perhaps as long as 18 weeks—to bring out the possibility of a maximum performance and then discontinued days before the actual event.

In his testimony, incidentally, Dr. Cooper touched upon drugs and race horses. He told the subcommittee that in France the thoroughbred association there had for six years been testing horses with stimulants. These tests take place every Wednesday outside Paris, he said.

"Never yet have they been able to show a horse that ran faster than he did without the drug," he said.

He suggested that fixing a race by drugging the intended winner, to increase his speed, was therefore an unlikely event. The more likely procedure, he said, "would be to give depressants to six horses in an eight-horse race, and bet all your money on the other two."

APPENDIX 22

[From the Courier Journal, June 27, 1973]

URINE TESTS OFF FOR NOW; ROZELLE INTRODUCES PLAN

(By Bruce Lowitt)

NEW YORK.—National Football League commissioner Pete Rozelle said yesterday the league has put off plans to require its players to take urine tests as a means of deterring drug abuse—but he emphasized the unprecedented move has not been ruled out entirely.

Urinalysis, strongly opposed by the NFL Players Association, "is still under consideration," Rozelle said, and if an NFL medical consultant, to be named this summer, deems it necessary, it could still be implemented for the 1973 season.

He acknowledged that the league may face legal problems if attempts to require players to submit to urine tests and that players, both individually and through the NFLPA, might rebel against such a plan. But he declined to state what steps the league might take in the event such a situation arose.

The 26 team representatives in the NFLPA unanimously endorsed a resolution last Sunday, at the end of their three-day meeting in Chicago, rejecting "proposals lacking due process which would invade the privacy of gifted athletes and further violate individual rights and freedoms enjoyed by other citizens."

ROZELLE ANNOUNCES PLANS

Rozelle introduced seven procedures supplementing the league's two-year old drug abuse program. Its main thrust, he said, is "designed to give us information to determine what problems we might have . . . society as a whole has problems with drugs, so we can't be exempt. We just don't know the size of it."

The current furor over drug abuse arose a few weeks ago when The New York Times published a story saying at least four NFL stars are under surveillance by narcotics agents for suspected heavy dealing in hard drugs. Rozelle rejected the report.

The supplements to the league's antidrug program call, in part, for:

Each team to periodically submit to the league its inventory of prescription drugs and bills for prescription drugs;

Each team to immediately report "any situation wherein one or more of the team's players, coaches, trainers or other personnel reportedly are involved in a drug incident";

The appointment during the summer of a medical consultant, "a physician with pharmacological expertise to advise as to the meaning and implication of the data reported by NFL teams";

Disciplinary action, including possible suspension from the league, against team personnel for improper disposition or use of drugs or failure to comply with the periodic reporting requirements;

Each player to notify his team physician of the nature of any prescription medication he takes which is obtained from sources other than the team. The player is not required to provide such information, but is "urged" to do so for his own protection;

The league to expand its own drug educational programs, particularly in ghetto areas, and to monitor the teams' drug indoctrination programs and, when necessary, suggest changes;

The league to consider further steps "to improve, strengthen or modify the program as it evolves."

This last step could mean the eventual implementation of urinalysis, a procedure employed in Olympic Games and several sports in Europe such as bicycle racing and boxing but which, except for horse racing, is virtually unheard of in the United States.

APPENDIX 23

[From the Courier Journal, June 19, 1973]

WALI JONES TELLS SENATE BODY PRESSURE CAN MOUNT DRUG USE

(By Bill Peterson)

WASHINGTON.—Wali Jones, a former professional basketball player who grew up in a Philadelphia ghetto, thinks black athletes are pressured to use drugs to excell in sports.

The reason is rather elementary, he said yesterday. Black athletes feel they have to produce, or they'll find themselves on a quick road back to the ghetto.

"They not only shoot horses (that don't produce), they shoot athletes," he told a senate subcommittee investigating drug use in sports.

Pressure to excel, Jones said, forces athletes to compete at all costs. This can mean playing with severe injuries, using amphetamines to "get up for games," or seeking pain killers.

In his own days as a player, Jones said he played one college season with a torn cartilage and as a pro used a pain killer, later described by doctors as harmful, which cut off all feeling in his back for days.

"There are drugs everywhere in our communities," he said. "We are hysterical about the situation. The young are dying all over the place."

Jones, a former pro with the Milwaukee Bucks, Philadelphia 76ers and the Baltimore Bullets, and several other athletes have formed an organization called Concerned Athletes in Action Program to fight drug abuse.

The group, he said, has found drug use prevalent even among young athletes in elementary schools.

His testimony before the Senate juvenile delinquency subcommittee, chaired by Sen. Birch Bayh, D-Ind., was in marked contrast to that offered by a parade of officials from the National Collegiate Athletic Association. Sen Marlow Cook, R-Ky., serves on the same subcommittee.

NCAA officials generally played down the severity of drug use in college sports, repeatedly claiming they knew of no coach, trainer, or team physician who uses pain killers that might harm players.

The NCAA, they said, is in the midst of an extensive program to find "whether there is a drug problem" among college athletes. It has sent questionnaires to 143 colleges to try to find out.

In a more bizarre effort, urinalysis tests, similar to those now given race horses, will be given, starting this fall, to athletes competing in NCAA championships to determine the extent of drug usage. Such tests are planned for swimming, soccer, basketball, baseball, football and other sports.

Robert W. Pritchard, chairman of the NCAA drug education committee, described the project as a fact-finding effort. "We do not intend any punitive measures for any individual or college," he said.

He didn't indicate what he thought testers might find. But it was clear the NCAA is concerned about amphetamine, or "pep pills," and anabolic steriods, frequently used by weightlifters and football players to increase their body size or strength.

Ironically, there is no scientific evidence to show that pep pills help an athlete perform, and some studies show "impairment of certain skills," said Dr. Donald Cooper, team physician at Oklahoma State University.

APPENDIX 24

[From the Washington Post, June 19, 1973]

NCAA Plans Screening for Drug Abuse

(By Nancy Scannell)

The National Collegiate Athletic Association plans to screen all athletes in its championship competitions, beginning this fall, to detect possible drug abuse, an NCAA official told a Senate subcommittee yesterday.

"The situation is critical," said Robert W. Pritchard, chairman of the NCAA's drug education committee, in explaining the decision to require "urinalysis or other methods" for drug-usage tests of amateur athletes.

He stressed the tests are not intended to be a "punitive measure for any individual or college . . . (but) only to gather facts which we hope will provide us with future direction" in stemming drug abuse.

Pritchard's remarks were made before Sen. Birch Bayh (D-Ind.), chairman of the Senate Subcommittee on Juvenile Delinquency, which is investigating the misuse of legitimate drugs by amateur athletes thinking they will improve their performances through the pill bottle.

In the past, the NCAA has either spot-checked or screened only winning athletes, but Pritchard said, "If the athletes know they're all going to be tested, that would be a deterrent.

"Abuse of drugs, always widespread but covert, has become a matter of public fact in the 1970s. It is impossible to foresee a time when it will be eliminated, but we believe that control of drug abuse can be achieved."

In an effort to determine what kinds of drugs are being used by amateur athletes and how frequently, the NCAA has sent out 22,600 questionnaires to be filled out anonymously by college athletes.

The association, which is the governing body for high school and collegiate amateur athletics, is also drawing up a list of drugs which are to be banned.

Pritchard said the logistics for the drug-testing still have to be worked out, particularly for such events as track and field where there might be as many as 600 persons in the championships.

Agreeing that something must be done to thwart drug abuse, Bayh noted, "It is a sad situation . . . When (the NCAA) has to contemplate . . . lining up athletes like horses" to combat drug abuse.

Currently, the NCAA prohibits everything but "therapeutic" drugs, those prescribed by a physician for illness, injury or deficiency. But Bayh questioned whether some physicians might be a bit overzealous in prescribing them, particularly if the coach or trainer pressured the doctor to get an athlete "in shape" for a game.

The consensus of the 10 witnesses yesterday was that mushrooming numbers of athletes are taking legitimate drugs and abusing them, primarily in hopes of improving their athletic performances.

The drugs most consistently abused, the witnesses said, are amphetamines (pep pills) and anabolic steroids (a substance that supposedly builds up weight and strength by activating the male hormones).

Drs. Cooper and Lawrence A. Golding, an expert on amphetamines and steroids, said that neither of these drugs has any positive effect on performance and each can cause deleterious side effects—particularly steroids, which have been linked with liver impairment and cancer of the prostate glands.

The doctors added that while steroids are not addictive, amphetamines are and many former athletes remain addicted off-season or after they have stopped playing at all.

Wali Jones, a former professional basketball player and now a coordinator of the Concerned Athletes In Action (Against Drug Abuse), said that pressures to perform have driven many athletes to the pill bottle, especially at professional levels.

"We are living in a drug culture and the sporting world is not immune," said Dr. Golding. "Drug-taking is not considered immoral, unsportsmanlike or dangerous by youth . . . procurement is apparently easy."

APPENDIX 25

[From the Washington Star-News, July 13, 1973]

DRUGS AND THE SINGLE-MINDED ATHLETE

(By Mike Roberts)

By their choice of narcotics, the members of Rutgers' 150-pound football team may have contributed unwittingly to the advance of civilization.

What the small fellows at Rutgers have done is give the Senate Subcommittee to Investigate Juvenile Delinquency an insight into how to deal with the problem of drugs in sports.

What makes athletes put all sorts of dangerous substances in their bodies? Pressure to produce, witness Phillip Shinnick testified yesterday.

Shinnick, once an Olympic long jumper and world record holder, is now athletic director at Rutgers' Livingston College. He illustrated his perception of the drug problem by comparing narcotics preferences between big-time jocks and the guys who play for the fun of it.

Shinnick's survey at Rutgers showed that quite a few of the 150-pounders indulged in a joint or two of marijuana, perhaps an occasional hallucinogenic, during their playing days.

He also found that athletes who considered their performances vital shunned so-called counter-culture drugs. A survey at the University of California for 1969 turned up these figures: Forty-eight percent of the varsity players took amphetamines, 62 percent took depressants, 26 took pain killers and 28 took anabolic steroids.

"During that year," Shinnick testified, "Ray Willsey, head football coach, said that there was no drug problem at U. C. Berkeley."

So that is what you're up against, Senators. A drug is not necessarily all bad, and a little something that will make a good old boy a little fiercer on the field or help him forget the pain in a battered limb is not to be confused with something a long-haired kid takes for fun instead of profit.

No less a thinker than Francis Tarkenton subscribes to that very philosophy, as Oberlin College Athletic Director Jack Scott told the committee. Yesterday the group consisted of Chairman Birch Bayh, D-Ind., and his aide, John Rector, with cameo appearances by two other senators.

It's a shame there weren't more lawgivers on hand to hear Scott explain Tarkenton's reasoning, as expounded in "Broken Patterns," his autobiography: Unlike counter-culture members, who use narcotics for sinful pleasure, ballplayers are justified in taking drugs to improve their performance. Marvelous—the Puritan ethic rallies to the support of jocks who shoot up.

This wasn't the only piece of fantasy aired at yesterday's hearings. A. O. Duer, executive secretary-treasurer of the National Association of Intercollegiate Athletics, came to explain what his outfit is doing to detect drugs, and wound up taking a sentimental journey through sports mythology.

Duer emphasized the need to subject the young men of our nation to stress, without benefit of narcotic assistance.

"This is what athletics is all about," he said, "subjecting our future leaders to the pressure of athletics. We must place these people under pressure to teach them character, morality and leadership."

A moment later, when Bayh announced the press of business on the Senate floor forced him to leave the hearing, Duer declared, "That's the kind of pressure that's pulling our society apart. That's the reason why we need these (drug) tests."

Otherwise, there wasn't much to laugh at. Scott, who heads the progressive Institute for the Study of Sports and Society, and Shinnick focused on athletes taking drugs merely out of fear of falling behind their rivals.

If all you want is a place on the 150-pound team, you can do without amphetamines and steroids. But if you aspire to the big time, you might believe, as Scott does, "Today it's a great rarity for someone to achieve success without taking drugs."

APPENDIX 26

[From the Washington Post, July 13, 1973]

HILL PANEL TOLD OF EXTENT OF PILL USE

(By Nancy Scannell)

Popping pills in the locker room has become as common as taking Vitamin C or salt tablets for many American athletes and the practice often is condoned by trainers, coaches and doctors, a Senate subcommittee was told yesterday.

Phillip K. Shinnick, a member of the 1964 U.S. Olympic track team, and Jack Scott, Oberlin College's athletic director who covered the 1968 Olympics as a free-lance writer, detailed personal and hearsay knowledge of growing abuse of legal drugs by athletes.

What the two described was an emergence of a new kind of sports etiquette in which athletes share not only drugs but also information on up-and-coming drugs they can try to obtain from their "friendly pharmacist," "jock doc" or even the local veterinarian.

Scott also accused professional and amateur athletic groups of "covering up" the extent to which legal drugs are used by athletes who think they will improve their performances with them.

He claimed the coverup stems from the organizations' "trying to combat publicity about athletes using (legal) drugs" by having athletes do commercials warning young athletes to avoid marijuana, heroin and so forth.

While Shinnick and Scott unfolded their tales of widespread abuse to the Senate Subcommittee on Juvenile Delinquency, representatives of the National Association of Intercollegiate Athletics said they are planning a scientific study of just how serious the problem is.

A. O. Duer, executive secretary of the NAIA, and Dr. Donald Spencer, the association's medical consultant, announced that NAIA is seeking a $75,000 federal grant to conduct a mandatory drug-screening program of all athletes in its 15 national championship events this fall.

The program, if funded, would be exclusively for determining the extent of drug usage and the athlete would not be identified or disqualified from an event if tests were positive, Dr. Spencer said.

The NAIA's announcement followed a similar one by the National Collegiate Athletic Association last month that all athletes would be screened for drug use in national championships beginning this fall after a list of banned drugs is approved. The NCAA, however, intends to disqualify those testing positively.

The NCAA, which is the governing body for the nation's major colleges and universities, has 665 member institutions. The NAIA, the corresponding body for small colleges, has 565 members.

Sen. Birch Bayh (D-Ind.), the subcommittee chairman, said the hearings, which are to continue today, are intended to explore the extent to which legal drugs are diverted to illegal markets, particularly such drugs as amphetamines (pep pills), sedatives and anabolic steroids (the steroids supposedly build up weight and strength by activating male hormones).

In his testimony, Shinnick, who is also athletic director for Rutgers University's Livingston College, told of how a drug salesman peddled free bottles of muscle-relaxing pills, called Norflex, at a 1963 track meet in St. Louis.

That got Shinnick going on a seven-year Norflex binge that along the way included some serious flings with super-vitamins and, eventually, steroids, he testified.

"One prominent track and field weight man in Los Angeles (at a meet) actually had a hospital cart to hold syringes, medication and paraphernalia," Shinnick said, adding that getting drugs is almost effortless.

The personal, economic and political pressures on an athlete to "make it" are what force the athlete to turn to drugs, he said.

On a 1965 trip to the World University Games, U.S. athletes "were under constant pressure from the State Department (representatives with them) to beat the Commies," he added but the "Commies had even better" drugs than the Americans.

While Shinnick made several references to U.S. and foreign athletes who have publicly acknowledged using pain-killers and pep pills, Scott avoided naming users he said he knew.

Scott, who said he has never used amphetamines or steroids, focused instead on what he called the "hypocrisy" of athletic groups, such as the NCAA and the National Football League, in dealing with drug abuse.

The two groups employ "public-relations programs designed to take the attention off themselves . . . (and) make it look like hippies are the ones using drugs."

"They're giving parents the impression that if you can just get Johnny to cut his hair and try out for the football team, their problem will be solved."

Yesterday's other witness, Dr. Daniel F. Hanley, who has been associated with U.S. Olympic teams since 1960, said, "There is no place in sports for the use of steroids or stimulant drugs. There is no chemical answer to improved performance in sports."

APPENDIX 27

[From the Washington Post, July 14, 1973]

AAU Opposes Drug Screening

(By Nancy Scannell)

A representative of the Amateur Athletic Union told a Senate subcommittee yesterday that his group disapproves of drug screening tests for athletes until a more sophisticated detecting system can be developed.

"The psychological impact of taking urine specimens and having the athletes wait two to four hours for results after an event is depressing to even the best, well-adjusted participant," said Dr. Roy F. Goddard of the AAU's sports medicine committee.

The AAU's position is contrary to those of the National Collegiate Athletic Association and the National Association of Intercollegiate Athletics, which have both told the Senate subcommittee on juvenile delinquency that they favor such tests at championship competitions.

The NCAA already has announced it plans mandatory drug tests beginning this fall or athletes in national championship competitions once a list of prohibited drugs is approved. The NAIA is seeking a federal grant to begin a similar program solely to detect the extent of abuse and plans no sanctions against those testing positively.

While some persons might think a monitoring system is a solution to the drug problem, Dr. Goddard, a pediatrician, said, "what is not well understood are the complexities of such programs, including the development of a reliable, scientific checking system that today is expensive and time consuming, to say nothing of the psychological inequities and medico-legal problems involved in such programs."

"Until microtesting is adequately developed and until our governing boards accept that testing should be for the benefit of the participant, and not for the withholding of illusory benefits of drug usage to an athlete, we should not encourage this unwieldy, complicated non-productive monitoring of our athletes."

Olan Cassell, executive director of the AAU, and David G. Rivenes, its president, told the committee that the union has no regulation authorizing it to require such tests. Cassell said after the hearing that it is possible the AAU convention in October might be asked to approve such tests at the championship level only.

Olympian Eddie Hart, who won a gold medal in the 400-meter event at Munich also testified yesterday, but favored drug screening tests because "they would take away a lot of rumors about who's using drugs.

"The tests have nothing to do with lessening a person by having him take a urinalysis test" in major competitions.

Four-time Olympian Harold Connolly, who described eight years of being a "hooked athlete" on steroids, said there should be extensive research on the effects of that drug on athletes.

Steroids supposedly build up weight and strength, although several doctors have testified that the weight gain is temporary and results from the retention of fluids in the body. The side effects can be quite dangerous, several physicians have testified.

Connolly said he was first exposed to the "sports medicine bandwagon" at the 1960 Olympics "when one began to feel he was putting himself at a decided disadvantage" if he didn't use steroids.

He experimented with steroids, under a doctor's supervision, for eight weeks after the Games and didn't use them again until the 1964 Olympics. He continued using them until last year.

"The dilemma for me is that I have no doubts (steroids) increased my sheer weight and strength," he told Sen. Birch Bayh (D- Ind.), subcommittee chairman.

The odd thing, Connolly continued, is that he set world records in the hammer throw when he was on drugs and when he was off them. In 1962, while not taking steroids, he set a record of 231 feet, 2½ inches. In 1965, while taking steroids, he set his second world record of 233 feet, 9½ inches. The difference, he said, was "certainly not significant."

Connolly warned that the use of steroids by women and high school athletes is growing. He also told the committee that in 1968 he observed:

"Athletes with their own medicine kits, practically doctors' bags, in which they would have syringes and all the various drugs."

Athletes "obligingly injecting each other with their various vitamin B12, liver and steroid shots."

APPENDIX 28

The Pharamacological Basis of Therapeutics—Fourth Edition—The Macmillan Company

A TEXTBOOK OF PHARMACOLOGY, TOXICOLOGY, AND THERAPEUTICS FOR PHYSICIANS AND MEDICAL STUDENTS

CHAPTER 70—ANDROGENS AND ANABOLIC STEROIDS

(By E. B. Astwood)

ANDROGENS

History. The observation that castration makes the eunuch, properly credited to primitive man, ushered in the dawn of endocrinology. By the year 1771, John Hunter had induced male characteristics in the hen by transplanting testes from the cock (*see* Forbes, 1947); however, credit for the discovery that the testis is a gland of internal secretion is usually ascribed to Berthold, who in 1849 showed that the transplantation of gonads into castrated roosters prevented the typical signs of castration. This was the first published experimental evidence for the effect of an endocrine gland. However, it was not this observation but the popular belief that failure of testicular function was the cause of symptoms of old age in men that stimulated many attempts to isolate an active testicular principle. As an example of the wide acceptance of this belief may be cited the experiments of Brown-Séquard (1889), the renowned French physiologist, who prepared a testicular extract and administered it to himself. He was convinced that he had gained in vigor and capacity for work from the treatment, but it is now known that his aqueous extract was devoid of hormone.

Chemistry. The elucidation of the chemistry of the male sex hormones was made possible by the development of methods of assay. The procedure of Koch and coworkers for the determination of androgenic activity utilized the growth response of the capon's comb. This assay was widely employed as a guide in the chemical isolation of active androgenic substances from urine. The isolation of the urinary principle was first accomplished by Butenandt (1931), who by herculean effort obtained 15 mg of crystalline *androsterone* from 15,000 liters of male urine, and in 1932 Butenandt proposed a structural formula that was later shown by synthesis to be correct (Ruzicka *et al.*, 1934).

Further chemical investigations led to the isolation, in 1934, of another androgenic principle from urine, which differed from androsterone by having a double bond in the ring system. At first called *dehydroisoandrosterone*, this compound, *dehydroepiandrosterone*, was later shown to be an excretion product of adrenal origin.

Studies of chemical derivatives of these substances yielded new information. Thus, it was observed that androsterone acetate was as potent as the free alcohol but had a prolonged duration of action. Also, the reduction of androsterone to *androstanediol* increased activity two to three times, in much the same manner as does the reduction of estrone to estradiol.

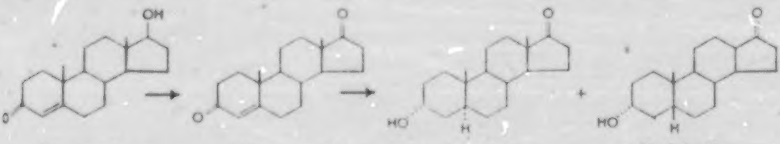
Attention next focused on the testis as the real source of male sex hormone. It soon became evident that there were physiological and chemical differences between androsterone and the extracts of testicles. For example, active testicular extracts that were equal to androsterone in promoting comb growth in capons had a much greater effect on the seminal vesicles of casterated rats. Active testicular extracts were first prepared as early as 1927 by Loewe, using the mammalian seminal vesicle as a test (*see* Loewe and Voss, 1930). The testicular principle was isolated in crystalline form by Laqueur and associates (*see* David *et al.*, 1935), and soon its chemical structure was elucidated and the hormone synthesized (Ruzicka and Wettstein, 1935); this substance was called *testosterone*.

Testosterone is 10 times as active as androsterone in promoting comb growth in the capon, and about 70 times as potent in its action on the seminal vesicles of castrated rats. In all probability, testosterone is the true testicular hormone, and androsterone and its inert isomer, etiocholanlone or 5β-androsterone, are its major urinary excretion products (*see* Table 70–1).

A great many other steroids with androgenic activity soon became known; some were isolated from ovarian and adrenal tissue as well as from the testis, and numerous analogs and derivatives were prepared. The acetic acid ester of testosterone was found to be more potent than testosterone and to have a greatly prolonged action. As the size of the substituent increased, acivity by the cock's comb test fell off but duration of action in mammalian tests increased. In short-term tests testosterone propionate was found to be particularly potent and is still widely used in therapeutics; the cypionate (cyclopentylpropionate) and enanthate (heptanoate) esters are current long-acting preparations. 17α-Methyltestosterone was unique among 17α-substituted alkyl derivatives in retaining androgenic potency while at the same time being active when given by mouth. The 17α-ethyl and higher derivatives were almost inert and the 17α-ethinyl was androgenically weak but active as a progestin. Efforts to improve upon methyltestosterone as an orally active androgen have been vigorously pursued. Fluoxymesterone, the 9α-fluroro-11β-hydroxy derivative of methyltestosterone, is more active than the parent compound in animal tests, and mesterolone, the 1-methyl derivative of dihydrotestosterone, is a potent, orally active androgen in man. Thus far, no nonsteroid androgen has been discovered. A great many derivatives of testosterone have been prepared and tested in the search for compounds that might promote general body growth without having masculinizing effects. Such compounds are often called *anabolic steriods*, perhaps somewhat prematurely because a complete dissociation of the two effects has not yet been achieved, and even the degree of dissociation reached so far is a matter of debate. Furthermore, testosterone itself is one of the most potent anabolic steriods known. For general application it would be desirable to have anabolic compounds that are not androgenic, for this would permit their use in women without inducing masculinization and in children without causing undesirable effects on sexual and osseous development.

ANDROGENS

TABLE 70–1. Main degradative pathway of testosterone



Testosterone → Androstenedione → Androsterone + Etiocholanolone

Physiological and Pharmacological Actions.—The normal function of androgen in man is familiar to everyone in the remarkable changes of *puberty* that transform the body into a man. Minimal secretion from the infantile-sized prepubertal testis suppresses secretion of gonadotropin until, at a variable age, secretion of gonadotropin breaks out of its restraints and the testis starts to enlarge. Shortly thereafter the penis and scrotum begin to grow and pubic hair appears. Almost simultaneously the remarkable growth-promoting property of androgen is revealed in a rapid increase in height and the great development of the skeletal musculature, which, with thickening of the skeleton, contributes to a rapid increase in body weight. The testes reach adult proportions at about the time that the external genitalia are fully developed and before all of the changes of puberty are completed. The skin becomes thicker and tends to be oily because of a proliferation of sebaceous glands; the latter are prone to infection, leading to some individuals to acne. Subcutaneous fat is lost, and the veins are prominent under the skin. Axillary hair grows, and hair on the trunk and limbs develops into a pattern typical of the male. Some degree of development of the mammary gland can be detected as a disc of firm tissue in more than half of normal boys at this stage, later to subside or to disappear altogether. Growth of the larynx causes difficulty at first in adjusting the tone of speech and later brings about a permanent deepening of the voice. Early in puberty penile erections become frequent and masturbation becomes a regular phenomenon. Along with the growth of muscles there is increased physical vigor and strength, which probably become maximal at the end of puberty or shortly thereafter. Growth of beard lags well behind the other events of puberty and is the last of the new acquisitions to be completed. Concurrently, those whose inheritance so dictates show the first signs of growing bald, with recession of the hairline at the temples and thinning of the hair at the crown. At about this time the major spurt in growth comes to an end as the epiphyses of the larger bones begin to unite, and over the next few years only a 1- to 2-cm additional growth is possible.

Eunuchism. The normal actions of androgen are also nicely displayed by the consequences of deficiency. If the testes fail to function or are removed in boyhood, there is no puberty. A boy so afflicted continues to grow and becomes abnormally: the hands and feet become especially large and the limbs unduly long. The appearance and demeanor of childhood are in striking contrast to the stature; the larynx does not grow, leaving the voice high pitched and puerile. The skin remains soft and thin and develops a yellowish pallor from deficient melanin, deficient circulation, and a mild anemia; a characteristic fine wrinkling of the skin is seen about the eyes and mouth. The skeletal musculature is underdeveloped, and the small musculature is made still more inconspicuous by a layer of subcutaneous fat. Accumulation of fat is especially prominent around the shoulders and breasts and over the upper thighs, hips, and abdomen, the whole giving the mistaken impression of femininity. Familial baldness does not appear, the beard is scant or nonexistent, the axillary and pubic hair is very sparse, and the body hair is short and fine. The genitalia are those of a child, and there is no sexual drive.

Hypogonadism after Puberty. Some of the sexual characteristics developed during puberty are self-sustaining, while others must be supported by the continued action of androgen. Hypogonadism in the adult is typified by castration after puberty. The general bodily proportions remain the same, the penis does not shrink, the voice does not change, and the beard and body hair remain unchanged for a long time. Libido and potency are greatly reduced or annihilated, and the oft-quoted exceptions to this generalization are misleading. The prostate and seminal vesicles are atrophic, and the volume of the semen is very small or there is none at all. Immediately after castration there may be hot flashes and feelings of discomfort associated with anxiety, apprehension, and emotional lability.

Complete failure of the endocrine function of the testis in adult life is not a common event; a partial deficiency is more usual, and it often dates to an incomplete development at puberty.

General Effects of Androgens. When androgen is given before puberty or to a young eunuchoid man, its actions begin almost at once. Within an hour darkening of the skin from increased circulation of blood can be detected by a reflectance photometer, and within a few days dermal areas, which had been untanned by former exposure to the sun, visibly darken (Hamilton, 1948). There is also a dusky reddening of the scrotum and adjoining the genital region. Within 1 or 2 days of the start of treatment erections appear, which become inappropriate and frequent even to the point of discomfort within continued treatment in the same dose this excessive response subsides. Increased muscular strength and physical vigor are noted within a few days, and a general feeling of well-being prevails. Within a few weeks a distinct change in the voice can be noted, and soon thereafter the penis can be seen to be growing and traces of axillary and pubic hair appear. The striking effects on growth are expressed without delay and, if subsequent measurements of height and weight are plotted and extrapolated backward, growth appears to have started at the beginning of treatment. The rapidity of growth is impressive; the height may increase 4 or 5 in. during the first year and continue at a somewhat diminished rate for 2 or 3 years. With continued treatment, development follows the course of normal puberty with the growth of a full beard as the final tribute to vigorous and successful therapy.

Actions on the Pituitary. The nature of the mechanism of feedback of the testicular secretions upon the gonadotropic function of the pituitary is a problem of continuing uncertainty. Although it is a fact that large doses of testosterone suppress the secretion of gonadotropin, cause atrophy of both the interstitial tissue and the tubules of the normal testis, and suppress the excessive secretion of gonadotropins in the urine in eunuchism, the doses needed seem to be larger than one might expect. Earlier work had shown that certain testicular extracts devoid of androgen would suppress gonadotropin, suggesting that there might be a second testicular secretion, *inhibin*, that served a regulatory function. When estrogen was found in the testis of man and shown to be secreted in large amounts from the testes of some species, such as the horse, and elaborated by certain testicular tumors, as in the dog, it seemed likely that inhibin might be estrogen (McCullagh and Schaffenburg, 1954). As estrogen is the most potent inhibitor of gonadotropic function known, only tiny amounts would need to be secreted by the normal testis along with testosterone to accord with the facts.

Excessive excretion of gonadotropin in the urine frequently accompanies pathological conditions that cause atrophy, degeneration, or sclerosis of the seminiferous tubules when the interstitial tissue seems normal or hyperplastic, and when deficient androgen is not clinically evident. This suggests that a tubular secretion, perhaps estrogen, is deficient. Conversely, in the rare association of normal spermatogenesis and deficient androgen, the syndrome of the fertile eunuch, urinary gonadotropin may be only slightly higher than normal, again suggesting that a restraining influence upon the pituitary may arise in the tubule. Parenthetically it should be noted that there is no acceptable test for fertility in the human male.

Beside the possibility that estrogen may be secreted by the normal testis, earlier work indicated that the administration of testosterone led to enhanced excretion of estrogen in the urine. The conversion of testosterone to estrogen in the body has been amply confirmed by modern methods, but some uncertainty remains concerning the effective quantities thus provided and there is a question whether estrogen secreted by the testis or found elsewhere in the body from testosterone is the more important (Lipsett *et al.*, 1966; Baird *et al.*, 1969). Some of the older, established theories have been rudely shaken by recent experiments with mesterolone (1-methyldihydrotestosterone). This potent androgen, like others methylated at C 1 on the saturated ring A, is not subject to aromatization to an estrogen; indeed, experiments in man with large doses suggest that this is so and that pituitary gonadotropin is not suppressed unless very large amounts are given. Oral doses of 30 mg daily are androgenically effective, but doses as high as 150 mg daily influence neither the size nor the microscopic appearance of the testis (Laschet *et al.*, 1967b; Petry et al., 1968). Similarly, oxandrolone, given to normal men in doses as high as 40 mg daily for 6 months, does not reduce the seminal volume or the sperm count; this compound cannot, of course, be aromatized to an estrogen. Findings such as these would suggest that the feedback of the testicular secretion on the gonadotropic function of the pituitary is not mediated as much by androgen as by estrogen arising therefrom in the body. This untidy mechanism is unlike most endocrine interrelationships and will be suspect, pending further elucidation.

Actions on the Testis. Beside their actions upon the pituitary, however mediated, androgens exert a direct effect upon the testis, at least in certain species. Following hypophysectomy in the rat, shrinkage of the testis is slowed by the injection of androgen and spermatogenesis is maintained for a long time. This peculiar effect is also revealed by the biphasic response of the normal animal to androgen; moderate doses produce atrophy of the testis through suppression of gonadotropins, while with larger doses the atrophy is less because of the direct sustaining effect upon the seminiferous tubules. A great many compounds have been found to exert this effect, and some of them are only very weakly androgenic. Δ^5-Pregnenolone, for example, is highly effective but is almost devoid of androgenic potency (Selye and Albert, 1942); indeed, it has no other known endocrine or pharmacological action.

Anabolic Effects. The nitrogen-retaining effect was first measured in castrated dogs injected with androgen-containing extracts from the urine of normal men (Kochakian and Murlin, 1935). The effect was a most sensitive one to be so easily measured in response to such small doses of androgen. A new light was thrown upon the nature of the anabolic effect of androgens by the experiments of Papanicolaou and Falk (1938). They showed that the skeletal muscles of male guinea pigs are much larger than those of the female, and that the difference is abolished by removal of the testes. Injection of testosterone propionate into the female or the castrated male caused pronounced muscular development. The effect of androgen could even be noted by palpation of the head; the temporal masseter muscles show a large sex difference, but the other skeletal muscles are also involved to a lesser extent. This, then, is a clear-cut example of a difference between the sexes; the large muscles of the male represent a sexual character dependent upon androgen for its expression. Hypertrophy of the musculature in response to testosterone requires retention of nitrogen and other elements to build protoplasm, and in this sense testosterone exerts an anabolic effect.

The anabolic effects of androgen in human beings were carefully investigated by Kenyon and associates (*see* Knowlton *et al.*, 1942, and references therein), who, in extensive studies on metabolic balance, showed that the elements required for the building of protoplasm were retained in appropriate proportion. The effects were more pronounced in eunuchoid men, in boys before puberty, and in women than in normal men. A dose of 25 mg of testosterone propionate daily caused an average retention of nitrogen of 63 mg/kg daily in eunuchoid men. There was also retention of potassium, sodium, phosphorus, sulfur, and chloride associated with a gain in weight, which could be accounted for by the water held in association with the retained salts and protein. During recovery, sodium, chloride, and water were quickly lost from the body, and phosphorus and potassium were lost less rapidly and completely, while the stored nitrogen was retained for weeks. The relatively small dose of 5 mg of testosterone propionate daily also was effective. The nitrogen retained was about half that observed after 25 mg daily, and a dose of 50 mg daily was not followed by a greater effect. The daily dose of 5 mg was not accompanied by conspicuous effects on sexual development suggesting that androgen may normally contribute to adolescent growth at an early stage before sexual development is well advanced.

Estradiol benzoate in the large dose of 5 mg daily exerts metabolic effects similar to those observed after an equal dose of testosterone propionate. Again, the gain in weight is attributable in part to the protein retained and in part to water held with the sodium chloride. Progesterone, on the other hand, is mildly *catabolic;* daily doses of 50 or 100 mg, given intramuscularly, cause a slightly negative balance of nitrogen and a loss of salt in normal men and women (Landau *et al.*, 1955).

Most of the newer steroids used for their anabolic effects have not been so carefully studied, and their anabolic potency compared to testosterone in man is largely unknown. Furthermore, their androgenic activity in man has not been determined with any degree of accuracy. The problem would be simplified if there were some simple indicator of the action of androgen short of waiting for the growth of facial hair, for example.

Effects on Sebaceous Glands. It has been shown that the revalence of acne at puberty and during treatment with androgens is related to the growth and secretion of the sebaceous glands. Strauss and Pochi (1963) demonstrated that the effect is specific for androgens, and they have devised a rapid and accurate method for measuring the rate of secretion. Progesterone has no effect, and estrogens do not reduce the response to androgens. In this test, methyltestosterone is active in doses of 10 mg. daily of fluoxymesterone have no effect. In addition to providing a method for the assay of androgens in man, the test might be useful in evaluating endogenous secretion of the hormone.

Absorption, Metabolism, and Excretion.—Testerone from the tests is thought to be secreted at a steady rate and to give rise to a very low, but measurable, concentration in the circulating blood, amounting to 0.4 to 1.0 μg/100 ml. It has been estimated that an amount of about 7 mg. (range 4.0 to 8.0/mg.) is secreted per day by normal young men, and this is balanced by an equal rate of degradation of the hormone, largely by the liver (Hudson and Coghlan, 1968, Baird *et al.*, 1969). The major chemical reactions convert the hydroxyl at position 17 to a ketone, reduce the double bond, and reduce the 3 ketone to an alcohol; the products are the weakly androgenic androsterone and its inactive isomer, etiocholanolone (Table 70–1), which are excreted in the urine largely as the sulfates and glucuronides. Small amounts of related urinary products are derived from testosterone, and tiny amounts of estrogen, chiefly estriol and estone, also are formed. Although the latter products are quantitatively minor, the contribution to the total urinary estrogen is substantial.

Androsterone and etiocholanolone, among many other compounds, are measured as *17-ketosteroids* in the usual clinical tests, but the major fraction of the ketosteroids of urine consists of metabolic products of secretions of the adrenal cortex. Thus, measurement of the excretion of 17-ketosteroids is a poor test for the functional activity of the testis and is a much better index to adrenocortical function. Low values point to adrenal insufficiency rather than to hypogonadism, and high values almost always are indicative of adrenal hyperactivity or tumor. In women, for example, if pronounced virilization is associated with normal or nearly normal excretion of ketosteroids, an ovarian tumor producing testosterone is likely, whereas high values point to an adrenal origin of the disorder. Without the testes, the human male is completely deficient in androgen even though the urinary ketosteroids may be within the normal range.

Dehydroepiandrosterone secreted by the adrenal cortex may be converted in the body to testosterone to a minor extent; however, in women, androstenedione of adrenocortical or ovarian origin may be converted to testosterone to a measurable degree and account for a sizable proportion of the total rate of testosterone production, ranging from 0.15 to 0.54 mg per day. In men, the total rate of production of testosterone (4 to 8 mg per day) is accounted for almost entirely by the secretion of testosterone from the testis (Hudson and Coghlan, 1968; Baird *et al.*, 1969). In abnormal conditions, the adrenal cortex can be the place or origin of androgens and can give rise to masculinization and to massive excretion of 17-ketosteroids. In the adrenogenital syndrome, for example, there is an enzymatic defect in hydroxylation. Precursors of hydrocortisone, some of them weakly androgenic, are poured into the circulation from the hyperplastic adrenals in large amounts and are excreted in the urine as ketosteroids and as pregnanetriol and related compounds.

Testosterone secreted by the testis or given by injection is bound to a specific carrier protein and transported in the blood to the androgen-responsive tissues. There, a selective process causes the hormone to be concentrated in the cells and rapidly transformed in the nucleus to dihydrotestosterone. This compound, the most highly active androgen of endogenous origin known, is tightly bound to the chromatin of the nucleus, from which it can be dissociated only by organic solvents or proteolytic enzymes and not by aqueous extraction or deoxyribonuclease. The androstane reductase that effects the transformation is also closely associated with the nuclear chromatin (Anderson and Lias, 1968; Bruchovsky and Wilson, 1968; Wilson, 1970). These events do not take place to an appreciable extent in nongenital tissues, except in the skin, which contains sebaceous glands that are responsive to androgen in both sexes. In the curious inherited condition of male pseudohermaphroditism or in the syndrome of feminizing testes, the genotypic female undergoes normal feminine development associated with secretion from the testes of normal amounts of testosterone. Although the concentration of circulating testosterone is that of a normal man, neither this nor treatment with large doses of androgen has the slightest masculinizing effect. The androstane reductase is reduced or lacking in these subjects.

Testosterone injected as a solution in oil is so quickly metabolized and excreted that the androgenic effect is small. Testosterone given by mouth is readily absorbed, but such administration is almost completely ineffectual inasmuch as the hormone is altered by passage through the liver before reaching the systemic circulation. Attempts have been made to use absorption through the skin or through the buccal mucosa to bypass the liver and to slow absorption, but with only limited success. A concentrated solution of testosterone in dimethylsulfoxide may be an effective means of achieving useful absorption through the skin. The testosterone esters are much less polar and, when injected in oil, greatly favor the lipid phase and are absorbed much more slowly. Testosterone proprionate is much more active than free testosterone even when each is injected every day, and the ester produces a steady effect when injected at 2- or 3-day intervals. Esters of the larger acids are longer acting; the cypionate and enanthate are fully effective when given at 1- or 2-week intervals in proportionately larger doses. Suspensions of testosterone or its esters in aqueous media are effective and long acting, but they sometimes cause local irritation and the rate of absorption may not always be uniform. Densely compacted pellets of testosterone implanted under the skin are an efficient source from which a steady rate of absorption continues for a long time; the last remnants may not disappear for 6 to 8 months.

The esters of testosterone are metabolized in much the same way as is testosterone itself, but other changes in the molecule (as in methyltestosterone and fluoxymesterone) alter completely the course of metabolic degradation and the urinary products are largely unknown.

Bioassay.—Androgens used in therapeutics are pure substances, and the doses are measured by weight. Bioassay is used in the evaluation of androgenic potency of new compounds and of compounds used primarily as progestins or for their anabolic effect. The classical assay based upon the growth of the comb of the capon is still used for tests on body fluids and other biological materials. In one modification the newly hatched chick is used with the test substance being applied directly to the comb; this is an exquisitely sensitive test for androgen. Better parallelism with clinical effectiveness is given by assays in mammals, and the most widely used test depends upon the growth of the seminal vesicles or ventral prostate of the castrated rat.

Bioassay for Anabolic Potency. An early observation on a dissociation of the effects of androgens was made by Kochakian (1947). In the mouse the kidney is larger in the male than in the female and regresses in size upon castration. The normal male proportions are restored by testosterone and by a variety of other androgens, some of which, such as methylandrostanediol, are androgenically weak. Also, estradiol given with testosterone reduces the response of the seminal vesicles and ventral prostate without impairing the growth of the kidney.

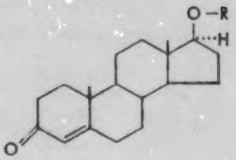
A systematic search for nonandrogenic anabolic steroids has made use of the growth of the levator ani muscle of the castrated rat as an assay, a method developed by Eisenberg and Gordan (1950) and Hershberger and coworkers (1953). By comparing the response of this muscle to that of the ventral prostate or seminal vesicle, a ratio of potency is expressed and compared to that of testosterone propionate as a standard in parenteral tests, or to methyltestosterone when orally active compounds are being assayed. Tested in this way a great many compounds have been found with ratios greater than 1, that is to say, with greater potency upon the muscle than upon the accessory sexual organs. Compounds such as norethandrolone have a high ratio in this test. The limitations of the method became apparent when the findings were not always borne out by other tests or by actual clinical trials. It is perhaps unfortunate that this particular muscle was chosen as an indicator of "myotropic" activity because it is intimately associated with the genital organs and its response to androgens is not shared by the rest of the skeletal musculature. With certain androgens such as androsterone, the seminal vesicles respond less well than does the ventral prostate, but the significance of such differences to therapeutic application is not clear.

Another test for anabolic activity is in the rat given an amount of food just sufficient to maintain a constant body weight. Measurement of the excretion of

nitrogen before and after giving the substance to be tested provides an index to nitrogen-retaining potency (Arnold *et al.*, 1959). An unusually high anabolic to androgenic ratio is given by stanozolol in this method. Stucki and associates (1960) have used the oophorectomized rhesus monkey under strictly controlled environmental conditions and on a constant diet, and measured the nitrogen-retaining effect of steroids with interesting results. Clear-cut, nitrogen-retaining effects from human and simian growth hormone were observed as well as positive effects from various steroids, one of the most active orally being 7α-17α-dimethyltestosterone (Lyster and Duncan, 1963). This technic is difficult, exacting, and time consuming, and only a limited number of compounds have been tested in this way.

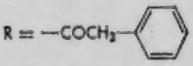
Preparations.—Testosterone Propionate Injection, U.S.P. (ANDRONATE, ANDRUSOL-P, MASENATE, NEO-HOMBREOL, ORETON PROPIONATE, PERANDREN), is one of the most effective and most widely used preparations; it is available as an oily solution containing 10, 25, and 50 mg/ml and is commonly given intramuscularly at 1- to 3-day intervals. Longer-acting esters to be injected every 1 to 4 weeks are *Testosterone Cypionate Injection,* U.S.P. (DEPO-TESTOSTERONE CYPIONATE), and *Testosterone Enanthate,* U.S.P. (DELATESTRYL), 1 ml of the oily solutions containing 100 and 200 mg of the ester, respectively. *Testosterone phenylacetate* is used as an aqueous suspension containing 50 mg/ml. (*See* Table 70–2.)

TABLE 70–2.—Esters of Testosterone



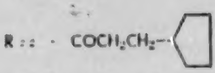
Propionate R = —$COCH_2CH_3$

Phenylacetate



Enanthate R = —$CO(CH_2)_5CH_3$

Cypionate



Methyltestosterone Tablets, N.F., are widely used. They usually contain 5, 10, and 25 mg; for buccal absorption, 10 mg; and for sublingual use, 5 and 10 mg. *Fluxymesterone Tablets,* U.S.P. (Halotestin, Ultadren), contain 2.5 and 10 mg. *Testosterone Pellets,* N.F., contain 75 mg of free (unesterified) testosterone and are used for implantation under the skin, about 6 at a time at intervals of 4 to 8 months.

Mesterolone (1α-methyl-5α-dihydrotestosterone, Androviron) and *methenolone* (Δ^1-mesterolone) are in use in Europe; a daily dose of 30 mg in the form of tablets provides replacement therapy in eunuchism. Many of the compounds listed below under preparations used for their anabolic effects are also employed as androgens.

When full replacement therapy with androgen is required, the intramuscular preparations are the most effective. Dosage should provide at least 10 mg per day; with testosterone propionate this is met by giving 25 mg three times weekly, and with the longer-acting esters, which may be somewhat less efficient, the dose is about 200 mg every 2 weeks. Long-term treatment with these doses may not cause full masculine development; there may still be remnants of a eunuchoid habitus, poorly developed muscles, and a sparse beard. Perhaps more prolonged treatment is required than is generally realized.

Preparations Used for Their Anabolic Effects. The following compounds have been introduced primarily for use as anabolic agents with the expectation that they would be relatively less androgenic than testosterone and its close relatives. None is free of androgenic activity in man, and in many instances the androgenicity is much greater than the results of animal tests predicted. Some have come to be used primarily as androgens, and many have been applied in the palliative treatment of carcinoma of the breast. The very small doses recommended for some of the compounds may well be detectably anabolic without noticeable androgenic effect.

Methandrostenolone (Δ^1-17α-methyltestosterone; *methandienone*, dianabol) tablets contain 2.5 and 5 mg; the recommended dose is 5 to 10 mg daily. *Nandrolone phenpropionate* (phenylpropionate ester of 19-nortestosterone; Durabolin) is provided as an oily solution containing 25 or 50 mg/ml, to be given intramuscularly in a dose of 25 to 50 mg every 1 or 2 weeks. *Norethandrolone* (17α-ethyl-19-nortestosterone; Nilevar) tablets contain 10 mg, and the oily solution for intramuscular injection contains 25 mg/ml; commonly used doses are 10 to 30 mg daily. *Oxymetholone* (17α-methyl-2-hydromethylene dihydrotestosterone; Adroyd, Anadrol) tablets contain 2.5, 5, and 10 mg; the recommended dose is 5 to 15 mg daily by mouth.

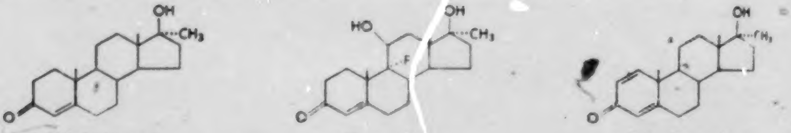
Stanolone (androstanolone or dihydrotestosterone; Androlone, Neodrol) is marketed for intramuscular injection as an aqueous suspension containing 500 mg/ml; this potent androgen is thought to be the effective substance by which testosterone exerts its actions on target tissues. *Stanozolol* (17β-hydroxy-17α-methylandrostano [3,2-c]-pyrazole; Winstrol) is available in 2-mg tablets to be given in an average dose of 1 tablet, three times daily. *Ethylestrenol* (17α-ethyl-3-desoxo-19-nortestosterone; Maxibolin, Orgabolin) is provided in the form of tablets; the daily dose is 3 mg. *Methandriol* (17α-methyl-5-androstene-3β,17β-diol: Androdiol, Mad, Neostene, Stenediol) is marketed as an aqueous suspension containing 25 or 50 mg/ml in 10-ml vials and as tablets of 10 and 25 mg. *Dromostanolone propionate* (2α-methyltestosterone proprionate; Drolban, Masterone) is dispensed in 10-ml vials of an oily solution containing 50 mg/ml. *Oxandrolone* (17β-hydroxy-17-methyl-2-oxa-5α-androstan-3-one; Anavar) is supplied in 2.5-mg tablets; it is said to be anabolic in adults in the dose range of 0.6 to 20 mg per day. The usual dose is 5 to 10 mg daily in adults and 0.25 mg/kg daily in children. *Bolasterone* (7α-17α-dimethyltestosterone; Myagen) is an orally active anabolic-androgenic compound with properties similar to those of methandrostenolone. (*See* Table 70–3, page 1574.)

Untoward Effects.—When used in women, all of the androgens carry the risk of causing masculinization. Among the earliest of the undesirable manifestations are acne, the growth of facial hair, and hoarsening or deepening of the voice, and thees are the very features that women most dislike. If treatment is discontinued as soon as these are noticed, they slowly subside. With continued treatment, as in the use of androgen in mammary carcinoma, there may also develop, the male pattern of baldness, excessive body hair, prominent musculature and veins, and hypertrophy of the clitoris, all largely irreversible phenomena.

The adverse consequences of giving androgens to young children are not fully understood, but the possibility of causing serious disturbances of growth and of sexual and osseous development makes highly questionable the use of androgens for their anabolic effects in childhood.

Edema. Retention of water in association with sodium chloride appears to be a constant sequel to the administration of androgen and accounts for a portion of the gain in weight, at least in short-term treatment. In the doses used to treat hypogonadism, the retention of water usually does not lead to detectable edema, but edema may become troublesome when large doses are given in the treatment of neoplastic diseases. Water retention would be undesirable in patients with heart failure or in patients prone to edema from some other cause, such as cirrhosis of the liver, renal disease, or hypoproteinemia. Edema may limit the use of large doses of androgen for their anabolic effects in states of malnutrition. Salt and water retention from androgens responds to the administration of diuretics, and use can be made of this effect to differentiate between growth of protoplasm and gain in weight from expansion of the volume of extracellular fluid.

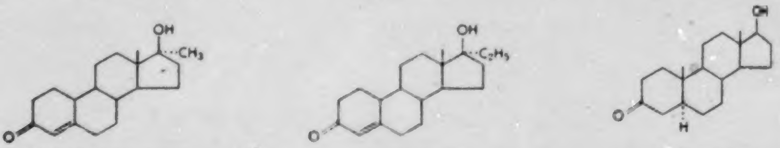
Table 70–3. Some androgenic-anabolic steroids used in therapy.



Methyltestosterone

Fluoxymesterone

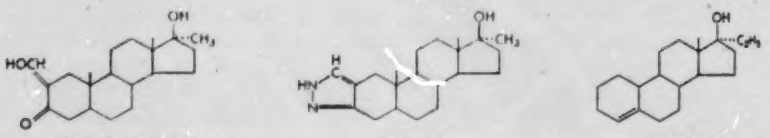
Methandrostenolone



17α-Methylnortestosterone

Norethandrolone

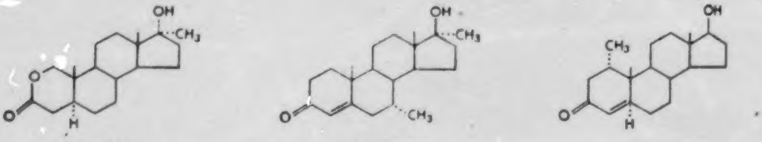
Dihydrotestosterone



Oxymetholone

Stanozolol

Ethylestrenol



Oxandrolone

Bolasterone

Mesterolone

Jaundice. Methyltestosterone was the first of a number of therapeutic agents discovered to cause a type of liver damage called cholestatic hepatitis. Jaundice is the prominent clinical feature, and the underlying disturbance appears to be stasis and accumulation of bile in the biliary capillaries of the central portion of the lobules, without obstruction in the larger ducts. The contiguous hepatic cells exhibit only minor histological changes and remain viable. This condition is not seen with testosterone or its esters, but steroids with a 17α-methyl substituent are particularly apt to cause it. These include fluoxymesterone, methandrostenolone, 17α-methyl-19-nortestosterone, oxymetholone, and stanozolol, although whether the first-mentioned compound should be included is not yet established. Other steroids substituted in the 17α position also cause the reaction. Norethandrolone (17α-ethyl-19-nortestosterone) has been extensively studied; although frank jaundice is unusual, doses of the order of 25 to 50 mg daily frequently cause some increase in bilirubin and in glutamic-oxaloacetic transaminase and reduced elimination of sulfobromophthalein. (Kory *et al.*, 1959; Perez-Mera and Shields, 1962). The response is clearly dependent on dose and becomes a frequent complication when very large amounts are given, as for palliation in neoplastic diseases. With 17α-methyl-19-nortestosterone, for example, given in doses of 30 mg daily, some increase in circulating bilirubin is an almost constant finding (Feldman and Carter, 1960). As even small doses of compounds such as methyltestosterone are metabolized with difficulty by the liver, large doses can be imagined to have cumulative effects and to result in the building-up of large amounts of the substance or a metabolite in the body. It has become common practice in the use of the 17α-substituted steroids to give short courses of treatment of 3 or 4 weeks each, interrupted by free intervals of similar length.

Methyltestosterone also causes creatinuria, as do 17α-methylandrostenediol and 17α-methylandrostanediol (Wilkins and Fleischmann, 1945). Again, the esters of testosterone do not have this effect. It seems unlikely that it is merely a coincidence that the 17α-methyl steroids cause both cholestatic jaundice and creatinuria, but it must be admitted that no causal connection between these two events can be envisioned.

Steroid Fever. Etiocholanolone, a major excretory metabolite of testosterone and inactive as an androgen, had always been considered to be pharmacologically inert. It was all the more remarkable, therefore, when Kappas and coworkers (1958) discovered that the administration of the compound intramuscularly to human beings caused an intense local inflammatory response and a prompt rise in body temperature to 103° to 105° F, accompanied by chills and followed by malaise and all the other features of a fever. Other compounds later found to cause fever include 11β-hydroxyetiocholanolone, pregnanediol, pregnanolone, 11-ketopregnanolone, and lithocholic acid. The effect was not seen in several other species and was more pronounced following intramuscular than intravenous injection. The local reaction after intramuscular injection and the frequent induction of thrombophlebitis upon intravenous injection point to the importance of local inflammation in the syndrome. Whether the thermogenic response to progesterone, as in the luteal phase of the menstrual cycle, is to be regarded as a similar phenomenon is not clear, and the part played by these steroids in various febrile states in man is still unsettled. It is unlikely that fever will ever be a side effect of therapy with androgens because the compounds known to cause fever are not used therapeutically.

Therapeutic Uses.—The outstanding therapeutic indication for the androgens is deficient endocrine function of the testes. Their use as anabolic agents, although of much wider potential application, is still in the stage of exploration.

Hypogonadism. Failure of the testis to secrete androgen cannot, of course, be recognized in childhood, and is first to be seriously considered when the changes of puberty seem to be delayed. The age of onset of puberty varies widely among individuals, and, when there is no evidence of maturation at age 15 to 17, there may be great concern on the part of the patient and his parents and even on the part of the consulting physician. There is a good deal of debate about the use of androgen to hasten the changes of puberty in normal boys with delayed sexual maturation. Most physicians would agree that androgens should be withheld if parental pressures can be overcome; they would probably also agree that little harm would be done if androgen therapy were undertaken, especially if the boy had grown to within a foot of a reasonable adult height. A moderate dose might be given in courses of 4 to 6 months at a time, and stopped for like periods to ascertain whether the testes were enlarging and development was progressing spontaneously.

When there is complete testicular failure and puberty cannot occur, vigorous and prolonged therapy is required. One of the long-acting esters of testosterone, such as the cypionate or the enanthate, may be given intramuscularly in a dose of about 200 mg every 1 or 2 weeks for a period of 2 to 3 years, and in a similar dose monthly thereafter for maintenance. Testosterone propionate in a dose of 50 mg three times weekly is effective and might be used initially, but for prolonged treatment it is inconvenient. Methyltestosterone in the recommended dose of 30 to 50 mg daily or fluoxymesterone in a 10- to 20-mg dose daily has been used, but experienced observers find that the androgenic response is limited and that even larger doses fail to bring about complete sexual development (*see* McCullagh and Schaffenburg, 1954; Wilkins, 1965; Paulsen, 1968). Although it is customary to begin treatment with full doses right from the start, there might be some virtue in beginning with small doses and increasing gradually over the first 6 months or 1 year. Presumably the oral preparations would be satisfactory for this purpose, and the gradual changes of early puberty could thereby be duplicated.

When hypogonadism starts in adult life and the maturation of puberty has already come about, it is customary and apparently satisfactory to use somewhat smaller doses as replacement therapy than are used in the undeveloped eunuch. Long-acting esters of testosterone in doses of 200 mg every month may be sufficient, and even methyltestosterone or fluoxymesterone in full doses may be effective.

It is a common clinical observation that individuals with hypogonadism repeatedly discontinue therapy for unstated reasons of their own. They seem to prefer their abnormal state, to which they have adapted through long effort. Perhaps the stresses of an artificial puberty are more uncomfortable than we realize, or perhaps the management of dosage is not as skillful as it might be. To avoid therapeutic failure some physicians adopt an authoritarian position and insist upon regular treatment.

Hypopituitarism. As long as human growth hormone is not readily available, androgen will continue to be a useful growth-promoting agent in the treatment of childhood dwarfism due to hypopituitarism. These children are given replacement doses of thyroid, 60 to 180 mg daily, and cortisone, 5 to 25 mg daily, or an equivalent compound, the doses depending upon the size of the individual. Treatment with androgen is not given until the age of puberty, so that the time of sexual development will be appropriate, and therapy is sometimes deferred even longer in the hope of achieving a maximal increase in height. As a maximum of about 1 ft is all that can be expected before growth ceases from closure of the epiphyses, treatment is most satisfactory if a height of 4 ft or so has been achieved spontaneously.

In boys, the same schedule of treatment as that in hypogonadism has been used, and acceleration of growth has been recorded that is just as rapid as in individuals with a normal pituitary. In girls, large doses of androgen cannot be given and treatment with estrogen induces only a slight acceleration of growth. Martin and Wilkins (1958) achieved a substantial spurt in growth by the use of 10 to 20 mg of methyltestosterone with 1 mg of diethylstilbestrol daily. There was no virilization and feminine sexual development was normal, including a normal development of axillary and pubic hair. If the methyltestosterone was stopped and the diethylstilbestrol continued, the body hair was lost only to regrow when the androgen was given again. It would seem reasonable in both sexes to give only small doses during the first year or so of treatment, in the expectation that a greater increment of growth would be achieved before the epiphyses unite. The reason for this conjecture is twofold: the property of androgen to cause closure of the epiphyses was not definitely established until effective preparations of the hormone became plentiful and large doses were used; and small doses of androgen can exert various anabolic effects without pronounced effects upon sexual maturation.

Use in Aging Men. There is a good deal of continuing debate about the question of a male counterpart to the menopause of women. It is clear that castration in the adult is frequently followed by symptoms typical of the menopause and relieved by androgen. It is also well established that the various indices of testicular function show a very gradual decline with advancing years. These include reduced libido, reduced sexual activity, and lessened muscular size and strength. On the average there is a slight rise in urinary gonadotropin with age, with wide individual variation (Albert, 1956) and a similarly variable decline in the volume of the semen and the total number of spermatozoa. So, although there is normally no sharp decline in the endocrine function of the testes to justify the term *climacteric*, in analogy with the condition in women, reduced testicular function seems to be a normal process in older men. As noted in Chapter 69, replacement therapy with estrogen in women is unquestionably beneficial; however, it is not yet established whether treatment with androgen is useful in normal men. It is quite likely that if the proper dose were known and if satisfactory oral preparations were available, androgen therapy would be more widely used. Clearly this is an important matter that deserves extensive and careful investigation.

Osteoporosis. A number of observers have described retention of calcium in response to androgens, but others have noted little or no effect. The response may depend upon other factors; it may be more noticeable when the bones are poor in mineral or when the diet is low in calcium. Definite retention of calcium has been seen in senile osteoporosis and in the osteoporosis of disuse, both from the administration of testosterone proprionate and of compounds such as norethandrolone. Using tracer methods with radioactive calcium, Heaney (1962) concluded that the effect was brought about by an inhibition of release of calcium from bone rather than from enhanced incorporation of calcium into the skeleton. The current consensus seems to be that androgens and their various anabolic derivatives are useful in the treatment of osteoporosis. In women, estrogen given concurrently with small doses of androgens may minimize virilizing effects.

Menstrual Disorders. Heretofore androgens were used in a variety of menstrual disorders, but they have been supplanted by the more effective orally active progestins. Androgens, in very small doses, are widely used with estrogen in the treatment of the menopause.

Refractory Anemia. McCullagh and Jones (1942) were the first to show that the mild anemia of eunuchoid individuals can be corrected by replacement therapy with androgen. It was later noted that large doses of androgen sometimes caused excessive erythropoiesis, leading to moderate polycythemia, and advantage was taken of this effect by Gardner and Pringle (1961) in the treatment of hypoplastic anemia and the anemia of neoplastic disease. Doses as high as 1.2 g per week of testosterone enanthate and 200 mg per day of methyltestosterone were used. There was a slight reticulocytosis and an increase in erythrocytes and hemoglobin. There was, of course, intense virilization but no other untoward effect except jaundice from methyltestosterone.

Androgenic-anabolic steroids are now widely used in the treatment of aplastic anemia, red-cell aplasia, hemolytic anemias, and the anemias associated with myeloid metaplasia, lymphoma, leukemia, and various other disorders. Although the response of the bone marrow varies in different conditions, erythropoiesis is stimulated first and most consistently, thrombocytopenia improves later, and leukopenia is ameliorated still later.

The doses of all the androgenic-anabolic steroids used have been large, and it is not known whether much smaller doses would be effective. Positive responses within 3 months, comparable to those induced by the weekly injection of esters of testosterone in doses of 600 to 1000 mg. were obtained by giving the following doses (milligrams per week) of the oral preparation: nandrolone phenpropionate and nandrolone decanoate, 600 methyl testosterone, 525 to 700; flouxymesterone, 280 to 350; oxymetholone, 400 to 700; methandrostenolone, 350; methandriol, 350; norethandrolone, 280; and stanozolol, 112. These doses are probably above the minimal effective dose in each case and do not reflect the relative potencies of the several compounds.

The mechanism of action has been sought in the stimulation of secretion of erythropoietin by the kidney. Although such an action can be shown under some circumstances, androgens have also been found to stimulate directly the synthesis of heme, an action potentiated by erythropoietin. The response of the other elements of the bone marrow suggests a direct effect thereon of the androgenic-anabolic agents.

To Accelerate Growth in Childhood. The advisability of using anabolic-androgenic steroids in children is a much-debated question, and no authoritative answer can yet be given. There are many causes of dwarfism, and happily there are a few that can be remedied. Failure to eat properly is a common cause, often correctable even in the extreme case of deprivation dwarfism; some chronic illnesses can be corrected, whereupon growth is restored; and other disorders, such as hypothyroidism and vitamin deficiences, can be cured by specific means. There are chronic disorders, of course, that cannot yet be effectively treated. In many instances no cause can be found for short stature, and it is here that the question of treatment with androgenic-anabolic steroids arises.

Androgens given before puberty, reproduce the normal puberal spurt in growth and the inevitable fusion of the epiphyses, soon thereafter, that puts an end to linear growth. The desideratum is a growth-promoting substance that does not mature the epiphyses or, failing this, a method of using the agents at hand in such a way as to gain the same end. It is possible that doses may be found that promote growth without closing the epiphyses, or perhaps favorable results will be obtained with courses of treatment extending over a few months and alternating with like intervals without treatment. Some compounds, for example, oxandrolone, have been observed to favor growth over epiphyseal maturation (Ray et al., 1965), suggesting the useful effects may be achieved with proper dosage. It is of interest that oxandrolone cannot give rise to an estrogen in the body. Could some of the epiphyseal closure from androgen be caused by the estrogen derived from them?

Probably the younger the child the greater is the risk of compromising the final mature height. In teen-agers in whom delayed puberty is the reason for short stature, careful treatment with androgen is probably justified. Treatment for a 6-month period might be given with the following drugs, in the indicated daily doses: oxandrolone, 0.1 mg/kg; methandrostenolone, 0.04 mg/kg; ethylestrenol, 0.1 to 0.2 mg/kg; or methyltestosterone, in a total daily dose of 5 mg or less (Sobel, 1968). If positive effects, such as growth or sexual maturation, are seen, treatment might be discontinued for 6 months to observe whether spontaneous puberty had supervened; if it had not, further courses could be given. In younger children, the decision to use this form of treatment is more difficult to make; it is usually undertaken as a last resort and always with the fear of limiting mature stature.

To Promote Anabolism. The potent androgens as well as the weaker ones designed as anabolic agents have been used clinically in a wide assortment of conditions. Some of these uses have been mentioned; others are more difficult to evaluate. Following major injuries, after surgical operations, and during fever or other severe illness, there is a profound catabolic state, leading to a widespread loss of tissue, wasting of muscles, shrinkage of the vital organs, and loss of depot fat. If the rate of metabolism can be matched calorically by artificial feeding, loss of fat can be prevented. If large amounts of protein can be fed, the negative balance of nitrogen can be reduced, but it is usually difficult to counter the catabolic process to an appreciable degree. Furthermore, it is not known to what extent these measures are beneficial (Bradshaw *et al.*, 1960); it is not even known whether the anorexia of illness compounds the injury or whether the disinclination to eat is an adaptive mechanism favorable to recovery. In view of these uncertainties, it is hard to decide whether the use of an effective anabolic agent would be helpful. Studies of various designs have shown that the androgens reduce the negative nitrogen balance and may convert a mildly negative balance to a positive one. The effects are intimately related to the intake of protein and the total caloric intake, and, depending upon the conditions, a small increase in either one of these may have a greater effect than the administration of the anabolic agent.

In milder and more chronic illnesses, an anabolic stimulus might help in the building-up of tissue and at the same time favor an increased intake of food through stimulation of the appetite. Many studies favor the view that anabolic agents are beneficial under these circumstances, but the reported rates of gain in weight are not impressive (Fruchan and Frawley, 1963).

The use of corticosteroids in the treatment of rheumatic, allergic, and related conditions is attended by a number of complications that have been attributed to catabolic effects. Under conditions of constant intake, compounds such as norethandrolone and nandrolone phenpropionate have been shown to reverse the negative nitrogen balance resulting from 35 mg of prednisone daily (Brøchner-Mortensen *et al.*, 1959), without affecting the beneficial effect of the corticosteroid. In clinical practice the androgens and the newer derivatives are widely used during therapy with corticosteroids, in the hope of preventing thinning of the skin, increased fragility of blood vessels, muscle wasting and weakness, peptic ulceration, and demineralization of the skeleton.

ANTIANDROGENS

A search for compounds that might inhibit the action of androgen was doubtless prompted by clinical considerations. Treatment of cancer of the prostate was one of the earlier aims; however, the uses of potent antagonists might range from virilization in women to precocious puberty in boys, and from acne to satyriasis. These compounds would also be valuable in physiological studies on hormonal interactions involving androgens and on the endocrine control of testicular maturation and function. Recent developments suggest that many of these aspirations are about to be fulfilled.

Estrogens, in a restricted sense, may be regarded as antiandrogenic. They may have actions of their own upon genital tissues, which differ from those of androgens and in this way seem to antagonize androgen. For example, estrogen in large doses can cause squamous metaplasia in the prostate of test animals and the prostate may then be heavier, which suggests an androgenic effect; however, such an altered gland may not respond normally to androgen, and in this sense estrogen might be thought of as an inhibitor of androgen. Also, there is the clinical observation, for what it is worth, that small doses of androgen given to postmenopausal women may not be virilizing if moderate doses of estrogen are given concurrently. Here, the retention of feminine characteristics may mask a mild androgenic influence.

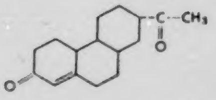
Progesterone comes nearer to being an antiandrogen, albeit a very weak one, and some of the most potent antiandrogens now known are derivatives of progesterone. Two other weak antiandrogens with no known hormonal activity of any other kind are the derivatives dodecahydrophenanthrene (Randall and Selitto, 1958) and A-norprogesterone, the structures of which are depicted in Table 70–4. The former somewhat resembles progesterone lacking a D ring; the latter is progesterone with one carbon atom missing from ring A (Lerner, 1964).

Cyproterone Acetate.—In the search for more potent, orally active progestins, cyproterone acetate (Table 70–4) was encountered; it is 250 times as active as progesterone in the Clauberg test in rabbits when given subcutaneously and 1000 times as active when given by mouth. Treatment of the pregnant rat with 1.0 or 10.0 mg daily led to the remarkable finding that the male fetuses were "feminized," the penis was underdeveloped and resembled a clitoris, the prostate was missing, and the testes were small and undescended. These changes were permanent (Hamada *et al.*, 1963). Detailed studies of the inhibition of androgen during fetal development should distinguish the changes caused by androgen from those effected by a testicular inducer.

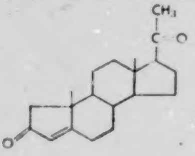
In the mature rat, the compound causes atrophy of the seminal vesicles, prostate, levator ani muscle, and other androgen-responsive organs (*e.g.*, the sebaceous glands), as well as cellular changes in the pituitary resembling those of castration (Neumann, 1966); the testes are unaffected by small or moderate doses. The actions of testosterone in the castrated animal are inhibited in a direct dose-related manner, and only about five times as much antagonist as testosterone is needed to reduce the androgenic response by 50%. With large doses the antagonism is almost complete (Neumann *et al.*, 1970).

Studies in man have not yet been extensive enough to permit unequivocal conclusions, but definite clinical effects have been seen. Laschet and associates (1967a) gave doses of 100 to 200 mg daily to men suffering from severe deviations in sexual behavior and noted that male sexuality virtually disappeared in 10 to 14 days. The effect passed off within 2 weeks after discontinuing treatment; no gynecomastia or other side effects were noted. The results of trials of the compound in the treatment of hirsutism and virilism in women and for acne have not been consistent, perhaps because quite different dosages have been used. Although cyproterone acetate is the most active antiandrogen so far encountered, closely related analogs are also active. The free alcohol is only about one third as active as the acetate and, suprisingly, is devoid of progestational activity, whereas the acetate is one of the most potent progestins known. Antiandrogen drugs are still in the investigational stage and are not yet generally available.

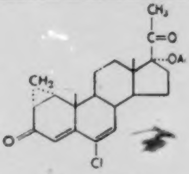
TABLE 70–4. Some antiandrogenic compounds



2-Acetyl-7-Oxo-Dodecahydrophenanthrene



A-Nor Progesterone



Cyproterone Acetate

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APPENDIX 29

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Chapter 13

Drugs and Hormones

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I. Introduction

Ever since the advent of athletic competition, man has sought the magic ingredient that would make the super athlete or would at least give him a winning edge over his opponent. The use of drugs, foods, and other substances for ergogenic purposes is as old as athletics itself. Athletes and coaches strive for maximal performance and are always willing to experiment with possible ergogenic aids.

When an individual breaks a record or performs extraordinarily well, one immediately examines his training regime or his diet to determine whether a unique training method or a new diet or drug enabled him to excel. Unfortunately, the proven and acceptable training methods are too often obscured by fads and fallacies associated with the use of so-called ergogenic aids. Because of these fads, hard work and scientific training procedures are too often abandoned. Almost every drug that is claimed to favorably affect any system of the body, especially the muscular, respiratory, or circulatory system, has at one time or another been suggested as an adjunct to a regular training program.

The dictionary defines ergogenic as something that "tends to increase work output, especially by eliminating fatigue symptoms." In this broad frame of reference, vitamins, carbohydrates, proteins, or any substance that is depleted during prolonged physical activity, or is necessary for normal health maintenance, might be considered ergogenic. However, in this chapter, I shall refer to ergogenic aids only as those substances that are not found in normal diets but are taken for the express purpose of improving performance. Vitamins can be included in this category only if taken in excessive amounts.

Any drug that pharmacologically aids the muscular, circulatory, or respiratory system is a potential ergogenic drug. Digitalis, Coramine, lecithin, and cocaine have been used in experiments on human performance because of their stimulating effects on these systems. Some alkaline preparations have been suggested as antifatigue substances because they may counteract the increased acidity of the blood during and after exercise. Most of these drugs have proven useless in aiding physical performance. Even adrenaline, a hormone known to prepare the body for action, when supplied exogenously does not improve physical performance.

Still the search goes on for some synthetic substance that will increase physical performance beyond the limits of traditional physical training. Drugs that have been proven worthless have been abandoned in favor of newer drugs with the fervent hope that, at last, *something* will take the athlete beyond his present capabilities.

Many substances have been tried as ergogenic aids. The philosophy of many athletes is that unless the substance is harmful, it might as well be tried; however, too often the contraindications of many of the drugs are unknown. Even drugs known to be dangerous are sometimes used if there is any indication that the drug will aid the athlete's performance. A search of the literature reveals many studies investigating the effect of drugs, hormones, diet supplements, and other substances on physical and mental performance. Some substances seem more popular than others either because their properties suggest that they should improve performance, or because studies have shown them to have some benefit. The following are among the many substances studied.

Adrenaline
Alcohol
Alkalies
Amphetamines
Aspartates
Caffeine
Negative ionized air
Noradrenaline
Oxygen
Phosphates
Protein
Sodium chloride

Cocaine
Coramine
Gelatin
Lecithin
Metrazol
Steroids
Sulfa drugs
Ultraviolet
Vitamins
Wheat germ oil

Many of these substances are actually categories of substances and can be further expanded. The amphetamines, for example, include four major types and each of these is more commonly referred to by its trade name—Benzedrine or Dexedrine.

Many substances have never been carefully studied; others have merited only one or two studies. The long list of possible ergogenic drugs can be reduced to very few, since there are only three or four drugs actually used by athletes today about which some controversy exists.

This chapter will discuss some of the more commonly used drugs: amphetamines, androgenic–anabolic steroids, and aspartates. The first part will deal with the amphetamines, which have been researched extensively, and the anabolic steroids, about which comparatively little has been written. Medical authorities have condemned the use of these drugs on ethical as well as medical grounds, with apparently little effect; their use is still widespread. It is not the purpose of the author to condone or condemn the use of drugs by athletes, but to report the results of available studies. The author has taken great care to present the research in a scientific and unbiased manner. However, philosophical and psychological implications are necessary and desirable when one discusses the emotionally packed issues involved in the use of amphetamines and anabolic steroids.

Every study has limitations. No study can be completely controlled, contain no false assumptions, or cover every eventuality. But any scientific evidence, even from a limited number of subjects or from a poorly controlled study, is better than testimonial information or "old wives' tales." We cannot be so close-minded that we refuse to accept the validity of studies that show beneficial effects from drugs, simply because we have a personal bias or because the results oppose convention. Open-mindedness must be maintained. The present-day coach, trainer, physician, and athlete are desperately seeking factual and scientific evidence concerning the use of drugs, and the following review will attempt to give that evidence.

A. Experimental Design for Drug Studies

The design of experiments varies, depending on (a) the number of subjects, (b) the experimental treatment, (c) statistical design, and

(d) the type of phenomena being investigated. In drug studies it is desirable to have a large number of subjects so that the statistical conclusions apply to the general population. However, many times because of the nature of the drugs being used, studies must be done with a limited number of subjects and must often be case studies.

In drug studies it is also desirable to follow a double-blind design. This means that a placebo is used and that neither the subject nor the researcher knows whether the subject being tested has taken the drug or the placebo on any particular test day. The placebo must look, taste, and smell like the drug being tested. It must also be an inert substance that cannot have any effect on the subject's performance or on any of the test results.

Because of informed consent requirements established by the federal government, human experimentation has become extremely difficult, and the double-blind procedure has become impossible to maintain. Subjects usually must be adults, and granting agencies are hesitant to approve studies using dangerous or questionable drugs, even though subjects agree to take the drugs.

A number of studies on anabolic steroids have been done by researchers who have known athletes who are using steroids or who plan on using them. They have contacted these athletes and asked them to be measured and tested prior to their taking the steroids and then have tested them again after they have used the drug. This system makes a double-blind procedure impossible; yet the opportunity to test individuals who plan on taking drugs is too good an opportunity to miss, simply because a double-blind procedure cannot be followed.

Studies investigating the effect of amphetamine require the use of a placebo since the phenomenon being studied is the psychological effect. The placebo is the only mechanism to ensure the control of psychological advantages or disadvantages.

As previously mentioned, if drug studies had to always follow accepted and desirable research designs, few studies would be undertaken and less information than we now have would be available. Objective measurements on individuals using drugs are better than testimonial information and wishful thinking of users.

II. Amphetamines

Dextroamphetamine sulfate is a powerful central nervous system stimulant that increases alertness, attentiveness, and the ability to do mental tasks. It is more popularly known for its ability to reduce or abolish the sense of fatigue and to depress appetite. Being a sympathomimetic drug, it is capable of causing vasoconstriction, increased blood pressure and heart rate, respiratory stimulation, smooth muscle relaxation in the bronchi, pupillary dilation, elevated blood sugar, and increased muscle tension. The ordinary therapeutic dosage used to achieve cortical stimulation is 5–10 mg.

Amphetamine is described as a white, odorless, crystalline powder that is slightly soluble in alcohol and freely soluble in water. A 5% solution in water has a pH of 5–6. It can be obtained legally only by prescription and is sold in tablets, ampules, and sustained-release capsules.

In this chapter, the term amphetamine will be used to refer to racemic amphetamine, the dextrorotatory isomer *d*-amphetamine, and methamphetamine. The amphetamines are available for use as the free bases and salts; most commonly these are amphetamine, *d*-amphetamine sulfate, and methamphetamine hydrochloride. These drugs are sold in drugstores under a variety of trade names. The amphetamines are often in combination with barbiturates to soften the effect on the central nervous system.

In the mid-1950's the alleged widespread use of amphetamine by athletes during competition was brought to the attention of the American Medical Association. In 1957 the AMA appointed a Committee on Amphetamine and Athletics. Questionnaires were sent to coaches, trainers, and athletes, requesting information on the use of amphetamine by athletes. When the questionnaires were returned and tabulated, less than 1% indicated any knowledge of the use of amphetamine during athletic performance. A similar survey was conducted by the American College of Sports Medicine in 1958. Thirty-five percent of the returned questionnaires indicated that amphetamine was being used by athletes during competition.

With so much interest and controversy being generated by the use of amphetamine, the Committee on Amphetamine and Athletics of the American Medical Association supported two major research projects to test the actual effect of amphetamine sulfate on performance. Smith and Beecher (1959) found that 14–21 mg of amphetamine sulfate per 70 kg of body weight administered 2–3 hours prior to running, swimming, and weight throwing improved performance in 75% of the cases tested. This study received considerable criticism due to its design, statistics, and lack of control. Karpovich (1959) administered 10–20 mg of amphetamine sulfate to subjects 30 minutes before performances in track running, swimming, and treadmill running. He found that 50 of the 54 subjects showed no change in performance with the drug. Three subjects showed improved performance, while one showed a decrement.

Other studies on the effect of amphetamine sulfate (Benzedrine) on performance include a study by Foltz *et al.* (1943), who measured performance by exhaustive rides on a bicycle ergometer. They found that 10–15 mg of amphetamine sulfate had no significant effect on the performance of four conditioned subjects. Haldi and Wynn (1959) tested the effect of amphetamine (Benzedrine) on swimming performance. They found that 5 mg of amphetamine administered orally 90 minutes before a 100-yd swim had no significant effect on the time of the swim.

On the basis of knowledge gained from the previous studies, Golding and Barnard (1963) conducted a study to investigate the effect of *d*-amphetamine sulfate on all-out treadmill running. Ten conditioned and ten unconditioned subjects were given 15 mg of *d*-amphetamine sulfate or a placebo (lactose) 2–3 hours before the tests. The first, or rested, run was used to study the effect of the drug on initial performance. The second, or fatigued, run was performed 12 minutes after the completion of the rested run. Because amphetamines are capable of reducing or abolishing the feeling of fatigue, it was felt that the second run was necessary in order to study the effect of amphetamine sulfate on performance in a fatigued subject. Each subject performed the test six times (three with amphetamine and three with the placebo). A double-blind procedure for administering the drug and placebo was used, and at least 1 day of rest was allowed between each test.

An analysis of the rested and fatigued runs performed by conditioned subjects showed that *d*-amphetamine sulfate had no significant effect on performance. The rested and fatigued runs performed by the unconditioned subjects were also analyzed. Again, the drug had no significant effect on the performance of these runs. An analysis of the mean drug and mean placebo measurements taken in the rested state showed that the drug significantly increased heart rate and blood pressure but had no effect on respiration rate. The recovery rate for blood pressure after the rested runs was retarded by amphetamine, but the drug had no significant effect on recovery heart or respiration rates. Following the fatigued runs, recovery rates for heart rate and blood pressure were retarded by the drug, while respiration rate was again unaffected.

After every test period each subject completed a questionnaire regarding his feelings of fatigue and his subjective evaluation of his performance. He was also asked whether he felt he had been administered amphetamine or a placebo prior to the test. Only one of the twenty subjects knew when he had taken the drug and when he had not.

Until recently, when it was added to the Bureau of Narcotics list of dangerous drugs, amphetamine was easily obtained. It was widely prescribed by physicians as an appetite depressant in diet control and obesity. However, since drug abuse has become a major problem, physicians are dispensing it with more caution. In normal doses, however, it has no serious detrimental side effects. Its ability to stimulate individuals and suppress subjective feelings of fatigue make it a tempting ergogenic drug.

The use of drugs to improve athletic performance is not confined to the United States. Dumas (1971), medical supervisor of the French National Physical Education Teachers College, indicated that, in spite of strict controls, the use of drugs by athletes is spreading rapidly. He described drug abuse among athletes as a "cancer in sports."

Surveys indicate that amphetamines and their derivatives are the drugs most commonly used. They are often accompanied by analgesics, sedatives, and barbiturates, which set up a cycle of stimulation and depression.

Andriver (1971) indicated that drugging suppresses the organism's alarm bell and could push the athlete beyond his capacities, with possible disastrous results. He noted that surveys and investigations have indicated that a number of fatalities have occurred in athletics because of drug abuse, and he emphasized that "heatstroke" of the type associated with absorption of amphetamine can precipitate cardiac failure. It is known that stimulants taken in large doses can induce a number of reactions ranging from excitation and insomnia to hallucinations and delirium. Amphetamines can also affect sensory perception, blood pressure, digestion, and cardiac rhythm.

Due to the publicity received by champion cyclists who allegedly take amphetamine more as the rule than the exception, Wyndham and his associates (1971) studied the effect of 10 mg of methamphetamine on oxygen consumption, heart rate, minute ventilation, and blood lactate levels in two champion cyclists working at rates between 2000–16,000 ft-lb/minute on a bicycle ergometer. No difference between the amphetamine and the placebo was noted for submaximal or maximal oxygen uptake, heart rate, or minute ventilation; blood lactic acid levels did change significantly. The two cyclists were able to continue to cycle at maximal effort for a longer period when on amphetamine. The study demonstrated that amphetamines do not increase the ability to do aerobic work, but the authors indicated that amphetamine helped the subjects to continue to exercise at high levels of work output for longer periods and enabled the cyclists to tolerate higher levels of anaerobic metabolism. Short-distance events may not present a danger to the athlete using amphetamine; however, events involving an hour or more of work could be dangerous because of a failure to recognize the danger signs of exertion and heat stress and to react to these warnings. The study was carefully controlled and the experimental design was good; however, two subjects are a very small number from which to draw conclusions. The study does give needed insight into the use of amphetamine in performance.

The French Antidoping Law of 1965 forbids the use of certain drugs by athletes in competition. Athletes suspected of drug use are examined by the faculty of the College of Medicine in Paris. The examination is based on two urine samples. A system of control and checks is outlined to guarantee honest accurate results. Since amphetamine is usually taken 2–3 hours prior to an event, it is easily detected in the blood or urine. The blood or urine is analyzed by thin-layer chromatography or electrophoresis. (Figure 1 represents a typical gas chromatogram of six amines.) However, usually only the winners of events are examined. They are disqualified if drugs are detected.

Athletes, however, are undaunted by fears and threats. The results of interviews with top athletes show that the desire to win is greater than either the fear of exposure or the possible harmful side effects of amphetamines. Too many athletes witness excellent performances by peers who take amphetamines and often credit the drug for these performances.

Since the use of amphetamine is so widespread, athletes tend to ignore any contraindications. Also, they are aware that large doses are administered to psychiatric patients with no apparent toxic effects. However, they seem to lose sight of the fact that abnormally high doses are administered under very stringent medical supervision. Some physicians seem to encourage the use of amphetamines by telling athletes that they are harmless in normal doses.

Agencies that control athletics are not concerned about the use of vitamins or other nutritional supplements, but they have become very concerned about the use of drugs. This concern and attempted control

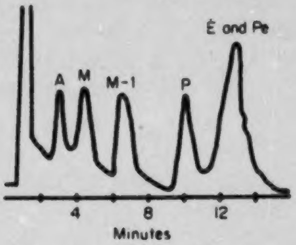

Fig. 1. Gas chromatogram of six amines (A, amphetamine; M, methamphetamine; M-1, mephentermine; P, phenylpropanolamine; E and Pe, ephedrine and pseudoephedrine).

by authorities tends to make the athletes believe that there must be a definite advantage to the use of these drugs to merit the controversy that their use generates. As the bodies that control athletics become more dogmatic in their disapproval of drugs and more persistent in their efforts to curb their use, the athletes have become more certain that drugs must affect performance advantageously. Otherwise, why all the fuss about something that has no effect on performance? One champion athlete explained that, if amphetamines were not helpful and if they did not aid performance, authorities would not be so "uptight" about their use. Athletes who take amphetamines to improve their performance do not consider themselves to be drug users in the same sense as people who take drugs merely to "turn on." They justify their use of drugs on a medicinal rather than emotional basis. It is interesting to note, however, that two out of four athletes interviewed indicated that they take amphetamines even when not competing because it helps in the performance of their daily tasks.

[illegible]

During the past few years, a great number of seminars, conferences, and articles have been presented on "doping" in athletics. The weight of evidence presented in experimental studies, as well as the clinical expertise of physicians, pharmacologists, and trainers, support the fact that amphetamines do not enhance physical performance and have no place in athletics. Experimental studies do not demonstrate increased physical performance, and the side effects of large doses of drugs can be harmful, especially during maximal performance.

Why then, in light of this evidence and knowledge, and in spite of stringent controls and regulations, is amphetamine still widely used? Amphetamine is a psychostimulant and produces an elevation in mood and a general feeling of being "pepped up." The athlete on amphetamine becomes keyed up for his event, which is desirable for optimal performance. He is mentally alert and, when observed objectively, appears to be emotionally ready to perform maximally. Mental attitude certainly can affect performance, and being mentally prepared for an activity or an event is desirable. Increased psychological preparedness appears to be the only rational justification for the continued use of amphetamine.

If psychological preparedness is the primary reason for an athlete's taking amphetamine, then evidence should be available to substantiate this pepping up of the individual's mental processes. Although an individual robbed of sleep is made alert by amphetamines, this is not the case in athletics. Athletes are seldom sleepy or tired prior to competition. Pierson and his co-workers (1961) studied the psychological effects of both amphetamine sulfate and a tranquilizer, meprobamate. The study involved subjective feelings as well as awareness of improvement in reaction time and movement time. Their study involved 26 adult male medical students who had been phenotyped for the study. This was done because it had been reported that somatotype was a consideration in determining reaction time and movement time. The subjects received a calcium carbonate placebo, 20 mg of amphetamine sulfate, or 800 mg of meprobamate in a double-blind design, 2 hours before testing. During the testing period, which lasted 15 minutes, an apparatus measured reaction time to a visual stimulus and movement time involving breaking a beam of light with the dominant hand. After the test, subjects were asked to explain whether they felt normal, tensive, or relaxed. Normal was assumed to mean that the subjects felt no physiological or psychological effects; tensive meant that the individual felt hyperexcited, aggressive, alert, or keyed up, and relaxed meant that the subject felt placid, relaxed, slow, sleepy, or lethargic. Since the subjects were medical students, it was felt that they would be better than average observers of these feelings. The statistical results indicated that the subjects could not identify which substance they had taken. Although the study showed that the subjects could not identify the amphetamine often enough to account for anything other than chance, it was, however, more readily identified than meprobamate. The subjective feelings of alertness or lethargy had no relation to speed of responses either in reaction or movement time, and body size had little relationship to the effect of meprobamate or amphetamine sulfate.

Since it is fairly well established that amphetamine does not improve or increase performance and that athletes taking amphetamines may do so to key themselves up for an event, this study is extremely important, because it indicates that, in a double-blind situation, subjects could not identify amphetamine. This study agrees with that of Golding and Barnard (1963), in which subjects given a questionnaire regarding whether they were on amphetamines or placebos were unable to distinguish the drug. These studies indicate that the psychological effect on athletes is entirely self-induced by their expecting to feel pepped up and ready to perform. In the light of this knowledge, more research needs to be undertaken to show the psychological benefits of expecting to feel good and its subsequent effect on performance.

Graham (1972) presented a method of minimizing motivational factors through the use of electromyography. The study investigated the effect of 15 mg of dextroamphetamine sulfate on the local muscular fatigue of the triceps brachii muscle during isometric and isotonic work. This was done by measuring, electromyographically, the integrated action potentials over 3-second time periods as the muscle contracted. The contractions were performed under varying loads and with the muscle in a rested or a fatigued condition. Maximal isometric strength, blood pressure, and heart rate were also measured.

The basic design of the study called for two groups of 18 subjects. One group performed an isometric exercise with the left triceps brachii and the other group performed an isotonic exercise with the same muscle. Each subject was tested once with a placebo, once with *d*-amphetamine, and once in a controlled condition with no capsule. The sequence of testing was rotated and all capsules were administered blind. The results indicated that 15 mg of amphetamine significantly decreased the integrated action potential of the triceps during isometric contractions in both the rested and the fatigued conditions. There was no significant effect on action potentials during isotonic exercise. Since it can be concluded that a decrease in the integrated action potential is associated with a reduction in the amount of muscular fatigue, it was shown that amphetamine sulfate did decrease fatigue during isometric contraction and that motivational factors were kept to a minimum.

Many individuals using amphetamines need a "downer" in order to sleep at night and so a cyclic pattern develops between "uppers" to enable the person to perform and "downers" to enable the individual to obtain needed sleep. This cyclic pattern is considered, by most psychiatrists, to be undesirable. The "upper," usually amphetamine, reacts differently when overcoming the effect of a barbiturate.

Air force fighter pilots required to take long missions lasting from 5 to 12 hours undergo some peculiar adjustments. They are required to go to sleep at an unusually early hour, get up early, and be on a long mission requiring the precision and skill involved in piloting, aerial refueling, and accurate accomplishment of their mission. Pharmacological support for inducing sleep as well as in-flight medication to combat fatigue are thought to be necessary. The demands motivated a study (McKenzie and Elliot, 1965) to investigate the effects of secobarbital and *d*-amphetamine on performance during a simulated air mission. The results on 48 subjects indicated that performance decrement occurred as a result of the use of secobarbital. Individuals receiving 200 mg of secobarbital at bedtime demonstrated a performance decrement 10 hours later at the beginning of a simulated flight and continued to show a decreased performance throughout the mission, which ended 12 hours later. The subjects receiving 5 mg of *d*-amphetamine showed an enhancement of performance and a lessening of fatigue. The importance of the study, however, was that those who received the amphetamine after the secobarbital, which had been administered the night before, also showed a decreased performance. Secobarbital apparently decreases the effect of *d*-amphetamine taken after barbiturate administration. The cyclic pattern prevents the amphetamine from having the effect it may have without the administration of barbiturates.

The news media and popular magazines carry numerous articles of athletes on drugs. In a three-part article in *Sports Illustrated,* Gilbert (1969) gives a blow-by-blow narrative of athlete after athlete using all manner of drugs. Names of top athletes along with their stories of drug taking for the purposes of improving performance, hastening recovery from fatigue, mastering pain, gaining weight and strength, and generally aiding the performance of their various athletic tasks are given in dramatic context.

Agencies that ban the use of drugs during athletic competition do so for a number of reasons. First, anything that may possibly affect the performance of an athlete must be available to every participant. Advantage gained by taking a drug that is not readily available to all is unfair. Hopefully, however, agencies forbid drugs mainly because they are concerned with the welfare of the athlete and are aware that indiscriminate use of drugs may produce deleterious effects.

The International Olympic Committee has announced that an athlete who is known to have used "dope" will be excluded from the Olympic Games. The surveys that were done 10 years ago showed that drug use was limited to only a few athletes. However, if those surveys were repeated today, the results would be vastly different; the figures would probably be reversed. The predominant attitude among authorities is that the solution to drug use by athletes is through understanding and education. However, the overly strong views of the "establishment" make it difficult for athletes to admit to the use of drugs. Too often the coach, trainer, or team physician plays the role of a disciplinarian instead of an understanding counselor, which makes the hope for drug control through athlete cooperation almost impossible.

SUMMARY

From the results of surveys, interviews, and observation, amphetamine is the drug most widely used by athletes today. Amphetamine is a central nervous system stimulant known to abolish the sense of fatigue and to increase the fatigued individual's performance of tasks needing skill, dexterity, and concentration. In athletic-performance studies, the weight of evidence indicates that amphetamine does not improve physical performance. Most athletes do not perform when sleepy or fatigued and therefore should need nothing to abolish this kind of fatigue. The physiological effects of amphetamine can be dangerous in events requiring performance over a long period. The major reason for athletes taking amphetamine seems to be to get them "up" for their event: to key them up and make them psychologically ready for the contest. Athletes are highly motivated and, before contests, are often nervous and hyperirritable, and these conditions may well make restful sleep impossible, leading to the use of barbiturates to induce sleep. Studies indicate not only that the cycle of barbiturate to stimulant is undesirable, but that the stimulant does not act normally after a barbiturate. The moral, ethical and legal considerations are beyond the realm of this chapter. It is agreed by most team physicians, coaches, trainers, and sports-controlling bodies that the use of amphetamine is undesirable, harmful, and should be outlawed. The International Olympic Committee, the American Medical Association, and most athletic governing bodies have rules to disqualify athletes using amphetamines. Furthermore, research has indicated that amphetamine does not enhance physical performance.

III. Androgenic–Anabolic Steroids

The androgenic–anabolic steroids resemble the male sex hormones both chemically and functionally. Androgenic refers to masculinity; therefore, the androgenic hormones are those that affect male characteristics, especially secondary sex characteristics. Anabolic means to build up or construct, so that anabolism is the constructive or building process. Male, or androgenic, hormones are produced primarily by the testes, with testosterone being the principal androgen. The hormones also have an anabolic effect. The synthetic androgenic steroids have the same physiological effects as testosterone: (a) growth stimulation, (b) acceleration of bone maturation, (c) virilization, (d) possible weight gain.

The attempt to separate the anabolic from the androgenic effects has resulted in a variety of synthetic steroids. Until recently, the androgenic and anabolic steroids were nearly identical in their effects when given in equal doses. Pharmacologists, however, by manipulating the carbon atoms are attempting to increase the anabolic effect while decreasing the androgenic effect. In this manner the constructive effect of the hormone on metabolism and strength can occur without the androgenic effects. The modifications in the steroid structure may make the drug more suitable for experimentation. Medical authorities believe, however, that any drug sufficiently potent to alter the body's metabolism is sufficiently potent to have undesirable effects. A number of sources warn that prolonged administration of oral androgenic–anabolic steroids can result in an impairment of liver function. The problem of administering these drugs is further compounded because they affect the prepubital and postpubital user differently. Studies on the androgenic–anabolic steroids as they relate to physical performance are conflicting and confusing.

The androgenic–anabolic steroids are better known by their trade names rather than their generic names. Dianabol, a commonly used androgenic–anabolic steroid, is Ciba's trade name for methandrostenolone; likewise, Parke-Davis Company developed an anabolic steroid with the trade name Adroyd; Searle and Company has Nilevor; Organon, Inc., makes Maxibolen; and Winthrop Laboratories developed Winstrol. The action, use, and contraindications for the androgenic–anabolic steroids are about the same. Maxibolen, one of the newer drugs, can be used as an example. The action of Maxibolen (Organon, 1970) is primarily anabolic (protein saving). It promotes the body tissue building processes. By manipulating one of the carbon atoms, there is a reduction of the androgenic activity but an increase in the anabolic properties. Long-term chronic toxicity studies were undertaken using rats and dogs, and toxicity was observed only when the dosage reached 1600 mg/kg (van Waylen and Buyze, 1961). It is felt that since the normal clinical dose is less than 0.1 mg/kg a large margin of safety exists.

The indications for the drug use are in the management of any disorders characterized by protein depletion. Maxibolen has all the characteristics of anabolic agents including promotion of tissue building and weight gain, stimulation of appetite and a sense of well-being. It is also supposed to renew vigor and combat depression and weakness due to chronic illness or prolonged convalescence and is therefore useful in several ways. (a) It promotes weight gain. The drug is administered to patients who are underweight due to illness; the increase in appetite usually results in greater caloric intake and, if the diet is adequate, weight should increase. (b) Maxibolen may relieve the symptoms of osteoporosis. This is a reduction in bone mass unaccompanied by any change in chemical composition. It is found in malnutrition, rheumatoid arthritis and other conditions. It is often seen in older patients who report subjective improvement when using the drug, although this has been seldom supported by radiological examination. (c) Other conditions indicating possible use of Maxibolen are arthritis, geriatrics problems, chronic disease and convalescence, anemia, and occasionally in pediatric cases.

The precautions to be taken in the use of the steroid are many, especially with regard to the liver. It is definitely contraindicated for individuals with any liver impairment. Some patients without known liver disease may show BSP (bromsulphalein) retention and increased serum transaminase levels, which, however, reportedly return to normal after discontinuation of the drug. The drug may have a hypoglycemic effect and diabetic patients may have to adjust insulin requirements. Salt and water retention are also a possibility. Other adverse reactions to the anabolic steroids are inhibition of testicular functions, testicle atrophy, impotence, epididymitis and bladder irritability, nausea, excitation and sleeplessness, vomiting, diarrhea, decrease in the PBI (protein-bound iodine test of thyroid function), retention of sodium, chlorides, water, potassium, phosphates, and calcium.

The drug is obtainable only with a written prescription of a physician. The usual adult dosage is 5 mg/day, and intermittent therapy is recommended when the therapy is extended over a long period. The drug is usually taken in tablet form. Most of the anabolic–androgenic steroids manufactured by drug companies include warnings that the drug should not be taken by healthy persons in the quest for advantage in sports.

Anabolic steroids have been used in clinical medicine for many years. Liddle and Burke (1960) clinically compared the anabolic potencies of four commercially available steroids. Only metabolically stable subjects were employed and any who might require anabolic stimulation were excluded. Urinary nitrogen excretion was chosen as the parameter to determine anabolic activity. The study was carefully controlled and monitored. Dianabol was the most potent anabolic steroid tested and doses of 1.25 mg/day had an appreciable effect. There was no further significant weight gain beyond dosages of 2.5 mg, even up to dosages of 30 mg/day.

Other effects of the drug were that women developed acne, and the liver function test of BSP was influenced adversely with daily doses above 10 mg. Whether BSP retention is a significant test of liver function in steroid therapy is discussed at length by Kuzell and co-workers (1962), who studied 320 patients with various rheumatic diseases using methandrostenolone (Dianabol) for treatment. Their study showed successful management of various rheumatic disorders. Side effects were transitory, being easily controlled by reduction of dosage. Kuzell *et al.* also found similar results with dosages of 2.5 mg and 5.0 mg per day.

Lambert and Site (1961), using a double-blind type of design, studied the effect of Dianabol on weight gain of 26 hospital patients and 26 controls. Each patient received 5 mg twice a day. A control period of 4 weeks was used prior to drug therapy to determine the stability of their weights. Both groups then received either Dianabol or a placebo for a period of 7 weeks followed by a 3-week period when both groups received placebos. Finally, patients were followed for 15 additional weeks to determine any further weight changes. The study showed that the steroid-treated group had a significant weight gain. There were no side effects from the therapy.

Some studies with muscular dystrophy patients have indicated that anabolic steroids increase muscular strength; other studies have shown increases in body weight. If gains in weight and strength do result from anabolic steroid therapy, the steroids could be considered as ergogenic aids. If the increases in weight are due to water retention or an increase in adipose tissue, they would be of no value to the athlete. If, however, the weight gain favorably affects lean body mass, anabolic steroids would be of interest to weight lifters, wrestlers, weight-event athletes, and football players. As will be seen later in this section, empirical and testimonial evidence for weight and strength gains are extensive. Controlled studies, however, are not as plentiful and can be briefly summarized as follows. Four studies (Fowler, 1965; Samuels *et al.*, 1942; Casner *et al.*, 1971; Fahey and Brown, 1972) do not show any evidence that the use of anabolic steroids increases weight and strength. Six other studies (Johnson and O'Shea, 1969; O'Shea and Winkler, 1970; Maul and Hagerman, 1971; Bowers and Reardon, 1971; Johnson *et al.*, 1972; Ariel, 1972) conclude that weight and strength are increased. The majority of physicians, trainers, and coaches do not support the use of anabolic steroids, and controlling athletic bodies are legislating against their use.

Fowler *et al.* (1965) studied 47 healthy men ranging in age from 18 to 25 years. Ten were conditioned athletes and the rest were untrained students. The untrained men were assigned at random to one of four treatment groups: (a) those who received a placebo, (b) those who received androstenolene, (c) those who received the placebo and exercised, and (d) those who received androstenolene and exercised. The ten trained athletes were divided into two groups; five received placebos and five received androstenolene. The subjects on the drug received 20 mg of androstenolene per day. The study lasted 16 weeks. The subjects assigned to the exercise groups were enrolled in a physical conditioning program that met 5 days a week for 30 minutes a day. Both physical strength and physical working capacity were measured before and after the exercise program. The only significant increases were in the groups receiving exercise, but there were no significant differences between the placebo and the androstenolene-supplemented subjects. According to this study, there appears to be no evidence that anabolic steroids increase strength in young men and, hence, no justification for the use of anabolic drugs by athletes.

Samuels *et al.* (1942) studied the effect of methyltestosterone on the grip strength of young men. The study was limited to four subjects. The results showed no evidence of changes in grip strength through the use of the drug.

Casner *et al.* (1971) studied the effects of stanozolol, a commonly used clinical anabolic steroid, on the body weight, body composition, and strength of normal young men. Twenty-seven men were randomly divided into four groups: one group for steroid therapy, one group for steroid therapy and supervised progressive weight training, one group for placebo, and the fourth group for a placebo and weight training. The parameters measured included specific gravity, total body water, body weight, and muscular strength. The double-blind study lasted 56 days, and the drug dosage consisted of 2 mg of stanozolol taken three times per day on days 1–21 and days 28–49. Dietary records were kept on all subjects. No side effects associated with the drug therapy were reported, although no blood chemistry was done.

The analysis of the data showed that the only significant difference among the four groups was found in a change in body weight. Both groups taking the anabolic steroids gained significantly more weight than the placebo groups. A further analysis of the data indicated that the increase in weight may have been due to fluid retention as opposed to an increase in muscle mass. The authors concluded that, based on their research, there was no justification for the use of anabolic steroids. The study was well controlled, and the steroid dosage followed the pattern reported by athletes using steroids. The changes due to the weight training were not significantly different between the drug and placebo groups.

Fahey and Brown (1972) studied 28 male subjects between the ages of 19 and 32. They were divided into two groups matched on lean body weight and strength. Body composition, maximal oxygen uptake, and isotonic and isometric strength of the upper and lower extremities were measured. The training program consisted of 10 weeks of intensive weight training three times per week. One group received intermuscular injections of deca-Durabolin R (1.0 mg/kg body weight) at weeks 2, 5, and 8. The placebo, which was sterile saline, was administered similarly on a double-blind basis. Body weight and maximal oxygen uptake were unchanged in both groups after training. Although strength and lean body mass increased in both groups, there were no significant differences between the groups. Due to the informed consent requirements, the double-blind nature of the study had to be disclosed. The authors concluded that deca-Durabolin in normal doses does not significantly affect weight, lean body mass, strength, or maximal oxygen uptake.

Johnson and O'Shea (1969), using 12 subjects, showed that administering 5 mg of Dianabol twice daily during a 3-week weight-training class caused significant gains in weight, strength, and several anthropometrical measurements. They also reported an increased oxygen uptake.

In another study, O'Shea and Winkler (1970) reported that anabolic steroid treatment in three competitive swimmers and three weight lifters increased strength significantly during an 11-week training program, although there was no evidence that the steroid treatment improved swimming speed.

Recently, Maul and Hagerman (1971) completed a pilot study using anabolic steroids on five weight trainers, three of whom took 5 mg of Dianabol per day. They used a dosage pattern of 3 weeks on the drug and 1 week off, which is a pattern commonly used by weight men. The remaining two subjects served as controls. The study lasted 12 weeks, and the experimental subjects were tested on all parameters at the beginning of each "off" week. The control group was tested only at the beginning and the end of the 12 weeks. As evidenced by the data, the steroid group showed marked improvements in weight gain, total body girth, and isometric strength. Oxygen consumption measured during a standard submaximal ride on the bicycle ergometer seemed to vary among the individuals of both groups, some improving slightly, others showing a decrement. Heart rates for three of the subjects did increase markedly, which might indicate a slight trend toward a higher energy cost for the ride. Isometric strength results were difficult to assess; the steroid group improved slightly, while the controls decreased slightly. The data were treated by multiple-comparison analysis and tendencies were found to be significant. The authors reported their results as case studies since the small number of subjects raised the statistical rejection value to very high levels.

There appeared to be no significant changes in blood chemistry as a result of steroid administration. The Ca^{2+} level dropped slightly for the steroid groups and the Cl^- level went up a little, but not significantly. Liver clearance tests showed a normal trend, indicating that there was apparently no acute hepatic disturbance. Creatine phosphokinase (CPK) activity was significantly elevated in subjects of both groups for pre- and posttests and tended to be highly variable. The authors were careful to examine the blood at least 48 hours after the subject's last strenuous workout, since vigorous muscle activity tends to elevate CPK levels. The raised CPK levels were probably a result of the severity of the subjects' strength workouts.

Although the authors of this study used a small number of subjects and the dosage of steroids was small, the data are interesting and significant. The study was carefully controlled and the data reliable. Individual results were quite phenomenal, with one subject gaining 27 lb with accompanying increases in strength that could not have occurred by chance.

Bowers and Reardon (1971) studied the effect of an anabolic steroid on strength and anthropometrical measurements. Eighteen male subjects, matched by size, strength, and age, were given 30 gm of a 90% protein supplement each day during the study. The nine experimental subjects were given, in addition to the supplement, 10 mg of Dianabol daily for the last 21 days of the 5-week study. The nine controls were given a placebo in addition to the supplement.

The subjects were tested, put on a 5-week training program, which consisted of the bench press, squat, curl, and tricep extension, and then retested. Strength was measured by the bench press and squat tests. The anthropometric measurements included weight, bicep girth, chest circumference, waist girth, thigh circumference, and forearm circumference. Three skin-fold measurements were taken, and percent body fat and maximal oxygen uptake were measured. Significant improvements in the bench press, squat, and bicep and forearm girths occurred in the experimental group. The authors concluded that the results of this study indicate that anabolic steroids may have a positive effect on the acquisition of strength and muscular development, although no beneficial effect was observed on maximal oxygen uptake.

Ariel (1972) investigated the effect of Dianabol on the nervous system by measuring the various reflex components of the knee jerk reflex and on the skeletal muscle contractile force by testing maximal weight lifting. Using six male subjects aged 18–22 years, the study lasted 15 weeks. The time was divided as follows: first through eighth week, training period; eighth through eleventh week, placebo period (when all six subjects received a placebo); and twelfth through fifteenth week, three of the subjects were given 10 mg of Dianabol orally in a double-blind setting. The results indicated that the experimental group was stronger during the anabolic period. Also, the rate of progress was higher. The anabolic steroid had a significant effect on the components of the knee jerk reflex. The author concluded that the anabolic steroid acted favorably on the central nervous system and on the biochemical processes involved in the knee jerk reflex as well as in contraction of skeletal muscles.

Johnson and co-workers (1972) studied the effect of Dianabol on 31 male subjects between the ages of 18 and 31 years. The study consisted of a 4-week pretest period when subjects became familiar with the weight-training program and developed strength fitness, and when all testing was administered. Blood tests to evaluate liver function and a sperm count to determine fertility were also given as a precautionary measure. Subjects were tested on maximal oxygen uptake, dynamic strength (one repetition on bench press and squat), static strength (measured with cable tension tests), girth measurements, and skin-fold measures. Subjects were randomly placed in the treatment–placebo groups and the remaining subjects formed the control group. Dianabol or placebo was administered in a double-blind procedure. In addition, all subjects were given 20 gm of 92% protein powder daily to supplement their diet. The training period consisted of 1 hour three times per week for 3 weeks, and work was near maximum.

The results of the study showed that the anabolic steroid group increased significantly in dynamic and static strength, in weight, and in five of eight circumference measurements. The authors concluded that, when accompanied by a high-protein diet and severe muscular stress, anabolic steroids increase weight, strength, and muscle size. This study was well controlled and, although short in duration, showed positive results with the use of steroids. No detrimental side effects were reported, and blood tests did not show liver involvement.

Hagerman conducted interviews with athletes at the World Pentathlon Games in 1966, at the Olympic Games in Mexico City in 1968, and at various other athletic events. He compiled the case histories of individuals using steroids and believes that these accounts are reliable due to the nature of the interview and the anonymity of the athlete. The following are three examples:

1. A university shot-putter and discus thrower administered deca-Durabolin injections to himself four times per week, using 25 mg per injection. The average recommended dosage is 25–50 mg/week. This athlete used deca-Durabolin because of claims of no resultant liver damage. He reported significant weight gain and improvement in performance.

2. A Pentathlon competitor used 24 mg of Winstrol per day for 4 months. He reported an increase in weight, increase in lean body mass, marked improvement in swimming times, and a decrease in running times.

3. Two athletes, an Olympic shot-putter and a discus thrower, used Dianabol sporadically for 2 years. The longest continuous use was for 6 months, the pattern being 3 weeks on the drug and 1 week off. The shot-putter's weight over a 2-year period went from 225 to 280 lb, and his best shot-put performance of over 66 ft occurred during this period. The discus thrower went from 220 to 268 lb in less than 6 months. The

distance of his throws increased from the low 180's to 207 ft. The daily dosage for each individual ranged from two to eight times more than the recommended dosages.

Other interviews with similar results were conducted but are not reported because they are repetitive and too numerous. Secondary sources, that is, individuals telling of other athletes' experiences or changes on steroids, were readily obtainable but are not reported because of their possible unreliability.

Golding (1970, 1971) conducted similar interviews with champion athletes in various parts of the United States and Canada and found widespread use of anabolic steroids. Weight lifters and weight-event men in track appear to be the greatest users. Persons in individual events are more prone to use steroids than individuals in team activities, although a number of football players reported using steroids. At first athletes were reluctant to discuss drug use; however, after a rapport had been established, they were quite willing to discuss the drugs and their reactions. They needed to be reassured that the interview was strictly scientific, that no value judgments would be made, and that their anonymity would be safeguarded. Athletes themselves are anxious to know what research has discovered about the drugs they are taking. None of the athletes interviewed was found to be on any of the common street drugs. The drugs were used solely in conjunction with the athlete's performance and desire for excellence. Some case histories follow.

1. A university shot-putter used Dianabol just prior to indoor track season. He started in January and took a 5-mg Dianabol tablet each day for 50 days. He followed this procedure for 4 of the 8 years he had been competing. He was never out of training, as he worked out all year. Each episode on Dianabol brought about an increase in strength. A crude testing program was self-administered and in 1 month showed an increase in a clean and jerk from 335 to 365 lb and in a squat from 425 to 520 lb. When asked whether his decision to take the drug for 50 days was arbitrary, or one that he found gave him optimal benefits, he replied that he could obtain only 50 tablets each year.

2. A university shot-putter and hammer thrower used Dianabol twice a year, one series of tablets off season and one series just prior to the beginning of track season. He took one 5-mg Dianabol tablet daily for 3 weeks, skipped the fourth week, and repeated this pattern twice more. He spent 18 weeks a year taking Dianabol for 4 years, with no noticeable deleterious side effects. He was concerned with possible liver damage and had three liver function tests administered to satisfy himself that there was no liver impairment. He obtained the Dianabol in Europe

and brought back enough for himself and two fellow athletes. He observed weight increases and increases in strength evidenced by unusual gains in bench press, squat press, and arm curl.

3. A university football player signed by a professional team was desirous of gaining weight and improving strength in order to improve his chances for a successful professional career. He had had some experience with Dianabol during his junior year in college but had taken it only sporadically during the course of summer training for the fall football season. He discontinued the drug, not only because he was already an excellent performer, but also because he was concerned about the ethics involved and the fear of discovery. His uncertainty about his ability to compete successfully in the pros renewed his desire to take steroids. He read extensively and attempted to research anabolic steroid use. He did not find any of the articles referred to in this chapter, although he read much in the non-research-oriented magazines. He is presently on a 3-month regime of 5 mg of Dianabol per day.

Most users of steroids feel that beneficial effects in strength occur only when accompanied by heavy workouts—usually weight training, which tends to complicate findings, since this increase in training may account for some observed strength gains.

It is apparent that the use of anabolic steroids is extremely common, especially among weight men. Individuals are naïve to believe that athletes would not resort to these measures in their search for excellence. We are living in a drug culture and the sporting world is not immune. Drug taking is not considered immoral, unsportsmanlike, or dangerous by youth. Drug procurement is apparently easy, and athletes desiring drugs have little difficulty obtaining them. Many athletes admit that physicians supply them with anabolic steroids and, although they recommended normal dosages, they do little to prevent the individual from increasing the dosage at will (Golding, 1970, 1971).

National and international authorities are trying to control the use of the anabolic steroids in amateur athletes. However, the International Olympic Committee admits that the methods of testing for steroids cannot match the situations that arise. Guidelines for a campaign against "doping" were established at the Winter Games in Grenoble, France, in 1968 and the Mexico Games in 1968. Strong measures were planned for the Winter Games in Sapporo, Japan, in 1972 and at the Munich Games in 1972.

A. Beckett (1971, unpublished information), interviewed at the 30th International Congress of Pharmaceutical Sciences, said that scientists were examining a test battery for detection and control of drugs, especially the anabolic steroids, and that a control system would be introduced under which a license would be granted to an athlete before he could compete in his chosen sport. The main problem associated with the detection of anabolic steroids is that they are usually taken out of season, and any weight and strength buildup takes place well before the event. Therefore, any drug detection program initiated during the season would show no trace of the drug, even though the athlete may have gained considerable advantage over other competitors.

One of the suggestions under consideration for stemming the use of steroids by athletes is that officials keep systematic records of the weight of all potential Olympic athletes, particularly discus throwers and shotputters. If there is a sudden change in weight in the months that precede the event, the officials will be entitled to request a check of blood and urine. This system of testing and record keeping is being proposed by the International Olympic Committee and will be carried out by the organizing committee for each sport under the supervision of medical committees set up by the 26 international federations. The International Olympic Committee will act as a high court in the event of a protest against disqualification. The International Olympic Committee's purpose is to create an atmosphere against drug abuse. Education is the answer in trying to make the athletes aware of the dangers associated with drug use. Drugs derived from illegal sources vary in purity, may be dangerous to health, and can be potential killers.

SUMMARY

The use of anabolic steroids by athletes is widespread. Research on the effects of anabolic steroids on body weight, muscular strength, and muscle size is confusing and conflicting. The medical literature indicating possible liver impairment with the use of anabolic steroids further concerns athletes, trainers, coaches, and team physicians. Finally, ethical and legal considerations make the problem of anabolic steroid use one with impossible dimensions.

Four major investigations report that anabolic steroids do not help weight and strength development and indicate that the anabolic steroids have no place in athletics. They point out that weight gain may possibly be fat accumulation or water retention, and not lean muscle mass. Six other equally well designed studies report significant improvements in weight, strength, and muscle size. These studies report no significant side effects of drug therapy and suggest that gains occur when the strength workouts are near maximum and when accompanied by a high-protein diet.

The International Olympic Committee and other sporting control bodies are against the use of anabolic steroids by athletes, and regulations have been established to disqualify participants who are known to use steroids. With increased restriction on the use of human subjects in experimentation, well-controlled studies involving anabolic steroids are difficult to conduct. Investigators, attending physicians, and subjects are hesitant to undertake many of the experimental studies that may supply answers regarding steroid use. Only the less toxic or relatively accepted drugs are used in most research studies. The controls being suggested by the International Olympic Committee are a step in the right direction; however, the chances of their success with anabolic steroids are extremely slim.

IV. Aspartic Acid Salts

Potassium and magnesium aspartates have been used clinically in the treatment of fatigue. The basis for their use involves the ability of the urea cycle to clear ammonia from the blood. Blood ammonia normally results from three principal sources: (a) foods containing ammonia compounds, (b) metabolism within the cell, and (c) actively contracting skeletal muscles. It is a well-documented fact that blood ammonia levels are elevated following physical activity. Increased blood ammonia is thought to be one of the reasons for fatigue. The elevated blood ammonia concentrations are returned to normal values through the urea cycle, which converts the excess ammonia to urea, which is then eliminated from the body. The urea cycle, however, may not be able to clear all the ammonia, and it is postulated that aspartic acid (see Fig. 2) is the rate-limiting step (therefore possibly the weakest link in the urea cycle) in the conversion of ammonia to urea. It is thought that increasing the aspartic acid concentration through exogenous sources of aspartic acid salts would strengthen the urea cycle so as to allow for a more functional conversion process. The elevated blood ammonia concentration could then be more rapidly converted to urea, thus preventing substantial elevation in blood ammonia levels following exercise. The decrease in blood ammonia would thus partially prevent the manifestation of fatigue.

Laborit *et al.* (1957) studied the effects of the combined K and Mg

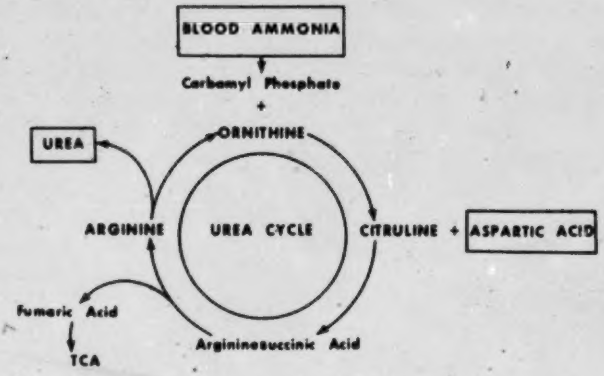

Fig. 2. The urea cycle.

aspartates on groups of white rats subjected to a standard swim test. It was found that the duration of the exercise after drug administration was significantly prolonged over that achieved with controls. After a standard rest period of 2½ hours, the animals were again given the swim test, and the aspartate-treated animals again swam longer than the other groups. Plasma ammonia levels were measured in the groups of rats subjected to the swim test. The ammonia levels of the control group increased; however, this increase was not seen in the group pretested with the potassium and magnesium aspartates.

In another study, Laborit *et al.* (1958) used 16 dogs, who breathed a mixture of 90% oxygen and 10% CO_2. These animals were given the combined salts of aspartic acid. Immediately after administration of the drug, plasma and expired CO_2 tension decreased and plasma urea concentration increased. This evidence supported the hypothesis that blood ammonia was being successfully converted to urea.

The administration of K and Mg aspartates to athletes reportedly had a positive effect on neuromuscular irritability, a significant reduction in existing fatigue, and supposedly a significant prophylactic effect against the induction of fatigue (Wyeth Laboratories, 1961). Most of the studies relied on the subjective judgment of subjects as to feelings of fatigue, and placebos were not always used. These and other studies have reported that aspartate therapy improves recovery from fatigue rapidly.

Consolazio *et al.* (1964) conducted a well-controlled experimental study on the effect of aspartic acid salts on the physical performance of men. Twelve healthy young men were matched on body weight and randomly assigned to an aspartate group or a placebo group. Subjects were not told to which group they had been assigned. The 9-week study consisted of 2 weeks of control and training, 5 weeks of either aspartate or placebo therapy accompanied by physical training, and 2 weeks of recovery. Either a placebo or 500 mg of potassium and magnesium salts of aspartic acid was taken orally twice daily. The physical training consisted of running 30 minutes on a motor-driven treadmill 5 days a week.

The results showed that there were no significant differences between the control and aspartate groups in (a) oxygen consumption, carbon dioxide production, oxygen debt, or RQ requirements; (b) recovery after an "all-out" run; (c) maximal breathing capacity or timed vital capacity. The authors concluded that there was no convincing evidence of the beneficial effects of aspartate therapy in humans in delaying the onset of fatigue.

Ahlborg *et al.* (1968) investigated the effect of potassium and magnesium aspartates on the capacity for prolonged exercise in man. This study is important because it also used human subjects rather than animals. Six men were selected from 300 healthy young men who had been tested on their ability to perform prolonged exercise to exhaustion. The physical fitness levels of these men were judged to be average. A pilot study was done on each subject to determine the work load on the bicycle ergometer that would result in exhaustion after about 90 minutes. The PWC_{170} test (physical working capacity at a heart rate of 170 determined by an electrocardiogram) was used as the test work load. The room temperature on the test days was between 21° and 23°C. The test was given on four consecutive days. On test days 1, 2, and 4, a placebo was given, and on the third test day, 1.75 gm of potassium–magnesium aspartate was given, followed by a similar dose every 6 hours prior to the test. The tests were administered at 1:00 P.M. each day. No standard diet was prescribed, although all foods ingested were reported. Since a high-carbohydrate diet tends to increase ability to do prolonged work, care was taken that only normal amounts of carbohydrates were ingested. During the tests, heart rate and respiration rate were recorded every second and tenth minute, and water was administered as needed.

The results showed that there was no significant difference between the amount of work accomplished on days 1, 2, and 4. However, on day 3, following aspartate administration, the amount of work accomplished was significantly improved. The mean work time increased from 85 minutes on days 1, 2, and 4 to 128 minutes on day 3. This 50% increase in work capacity is highly significant. The mean work performed on days 1, 2, and 4 was 93,500 kpm compared to 140,800 kpm on day 3, also a very significant improvement. This study indicates that the maximal capacity for prolonged exercise after administration of potassium–magnesium aspartate can be significantly increased.

It was hypothesized that a 50% longer work period at the same work load after administration of potassium–magnesium aspartate was due to a decreased rate of glycogen utilization and that the energy for a greater part of the work was supplied by fat. Other studies do not support the theory that potassium–magnesium aspartate improves muscle efficiency so as to require less energy for more work. No blood ammonias or ureas were measured.

One of the primary reasons for exhaustion in animals is the accumulation of ammonia resulting from deamination of adenylic acid to inosinic acid in the actively contractng skeletal muscle during strenuous exercise. Any substance that will prevent an increase in blood ammonia can possibly prevent the onset of fatigue.

L-Ornithine and L-aspartate are well-known intermediaries of the urea cycle essential to the incorporation of ammonia into urea. The effect of L-ornithine and L-aspartate mixture in lowering blood ammonia in rats has been demonstrated (Salvatore and Bocchini, 1961). It was shown that the combination of L-ornithine and L-aspartate was more effective in converting blood urea than was L-aspartate alone. The administration of L-ornithine and L-aspartate partially prevents an increase in blood ammonia by increasing the conversion of ammonia to urea.

In 1970, Cutinelli *et al.*, using 550 male albino rats, injected L-ornithine–L-aspartate (OA) one-half hour before the start of a strenuous swimming test. It was found, however, that in order to raise blood ammonia levels the rats had to be weighted to increase the amount of physical work, and the water temperature lowered considerably. Prior to the OA therapy, the animals displayed no protection against increased blood ammonia. Under the exercising conditions, the OA demonstrated a protective ability by lowering blood ammonia levels. In an attempt to demonstrate further protective ability of the OA, other blood parameters were studied. Levels of AMP, ADP, ATP, GTP, and GOT were observed: AMP, ADP, and ATP increased during the stress of exercise; however, only ATP was lowered by the OA administration. This could be explained as the utilization of creatine for resynthesis of creatine phosphate. The GTP level was also lowered by the administration of OA, suggesting a maintenance of the normal cellular membrane integrity under severe stress.

The authors concluded that the decrease of blood ammonia, ATP, creatine, and GTP in OA-treated animals demonstrates the efficiency of L-ornithine–L-aspartate administration in the treatment of severe physical exhaustion. Unfortunately, this study did not measure blood urea levels, which, if elevated, might support the theory that aspartate makes the urea cycle more efficient in handling increased amounts of blood ammonia and thereby eliminates the fatigue effects of ammonia accumulation.

Barnes *et al.* (1964) proposed another hypothesis for the enhancement of the urea cycle. Using rats as the experimental animal, they administered ammonium carbonate orally. It was proposed that, through the continuous stress on the OCA (urea) cycle by the exogenous ammonium, the enzymes of the cycle would be facilitated so as to allow for a more functional conversion process. Bjurstrom (1970), in a subsequent study, employed forced swimming on dogs and a similar ammonium carbonate regimen. He divided the dogs into three groups. Group 1 was physically trained; Group 2 was administered an ammonium carbonate regime; and, in Group 3, drug administration was accompanied by physical training. The results indicated that Group 3 swam significantly longer and had significantly lower blood ammonia levels than the other two groups. Unfortunately, neither of these studies measured the blood urea levels; therefore, the urea cycle facilitation theory could not be confirmed.

Similar studies in humans are difficult, since ammonium compounds are toxic and few, if any, are available commercially for human consumption. A few Swedish studies have reported using ammonium compounds in human studies, indicating that they may be available in Europe and that less caution is used in human experimentation.

Bjurstrom (1972) conducted a pilot study on blood ammonia and blood urea levels in humans before and after exercise on a bicycle ergometer. Blood ammonia increased substantially following exercise but was followed by little or no subsequent increase in blood urea nitrogen. These findings do not support the theory that conversion of blood ammonia to urea is the immediate fate of elevated blood ammonia nitrogen concentrations following exercise. It sometimes took as long as 90 minutes for blood urea levels to become elevated.

Bjurstrom and Golding (1972) are presently testing another possible theory relative to the body's ability to handle increased blood ammonia, and this approach is described below. Handler and Duda (1958) proposed that the conversion of glutamic acid to glutamine (glutamic acid and ammonia → glutamine) is the immediate fate of peripherally originating blood ammonia, not the incorporation of ammonia into urea through the urea cycle.

Ammonia resulting from skeletal muscle contraction combines with glutamic acid in the circulating peripheral blood, forming glutamine. The glutamine is subsequently deaminated in the liver or kidney, liberating ammonia in the urine as ammonium salts. The deamination of glutamine, however, appears to be a slow process with little or no increase in blood urea occurring until 60–90 minutes after the cessation of exercise, and even then only minimal elevations are observed. Research currently being conducted by Bjurstrom and Golding (1972) is concerned with evaluating pre- and postexercise concentrations of blood ammonia, glutamic acid, glutamine, urine urea, and blood urea. This work is being performed to specifically investigate the fate of elevated blood ammonia levels following exercise. Increases in glutamine without any concomitant increases in blood urea nitrogen or urine urea nitrogen immediately following exercise might well support the theory of Duda and Handler. Correlation between the reduction of glutamine and the increase in blood urea during recovery would somewhat negate the aspartate theory. If the glutamine hypothesis is true, glutamic acid may well be a better ergogenic aid than either ammonium compounds or aspartates.

SUMMARY

Not enough studies have been conducted on humans to merit any generalizations about the ergogenic effect of either the aspartates or the ammonium compounds. Most investigators have employed animals and the few studies with human subjects have had small samples. The previously reported postexercise blood ammonia and urea levels in man, as well as recent research findings from our laboratory, fail to support the exogeneous aspartate theory. Ammonium compounds, in this country, are still unavailable commercially, which makes human studies difficult. The administration of glutamic acid has not, as yet, been discussed in the literature. Aspartates, however, in normal doses are not harmful and present no serious contraindications, and further human experimentation should be undertaken.

V. Summary

The influence of amphetamines, anabolic steroids, and aspartates on physical performance has been reviewed in the present chapter. As with most alleged ergogenic aids, methodological considerations in the assessment of drugs and hormones are extremely important. Indeed, it is reasonable to suggest that much of the apparent disagreement in this area of inquiry frequently stems from differences in methodologies rather than actual effects. At any rate, it is quite clear that rigorous double-blind paradigms should be employed in the assessment of the ergogenic efficacy of drugs and hormones if at all possible. However, necessary informed consent practices sometimes rule out this possibility.

While the results of various surveys have disclosed that amphetamine is the drug most widely used by athletes, the available experimental evidence does not support this practice. With respect to the question of whether utilization of anabolic steroids facilitates muscular strength and body weight, the evidence seems to be equivocal. Aspartates have been found to improve physical performance in comparative studies involving rats and dogs. However, there is only limited evidence on the influence of aspartates on man's physical performance, and hence generalizations pertaining to man are not possible at this time.

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APPENDIX 30

[From Sports Illustrated, Sept. 28, 1970]

(By Herman Weiskopf)

WEIGHT LIFTING

High-ho, high-ho, it's off to lift we go—And, ho boy! were they ever high at the world championships in Columbus last week. In one of the big drug scandals in sport, nine medalists were disqualified when it was learned they had taken amphetamines

It might be said that the World Weightlifting Championships, which were held in Columbus, Ohio last week, began on an upbeat. It might also be said that he who is up had better be prepared to be taken down. Which is precisely what happened in Columbus. Before anyone could say Federation Haltersphile Internationale, that body, which govern weight lifting, had disqualified nine of the first 12 medalists for having taken "ups," or amphetamines. It was the first all-out crackdown on drugs in weight lifting, perhaps the most far-reaching ever in any sport, and although the lifters had been warned the FHI would enforce its rule against drugs, no one listened.

The competitors had come from 34 countries, intent upon enjoying themselves, lifting weights and eating. They were taken on a guided tour of a shopping center and subathed on the lawn in front of their dormitory—several of them in under shorts. "What else is a man to do if he left his bathing suit in Europe?" said one. And did they eat. Seconds, thirds, fourths . . . until they were told that their $5-a-day meal ticket entitled them to three meals a day—one at a time.

A minor setback. Vasily Alexeyev, Russia's 6'1", 300-pound superheavyweight, soon provided comic relief. Seems that after one of his workouts he headed for the car he thought was waiting to take him back to the dorm. Seems that the woman in the car was there to pick up her teenage son, and was aghast when Alexeyev flopped into the backseat. "Out," she cried. Poor Vasily, whose command of English is slight, tried to tell her which way to drive him. Pointed toward the dormitory, he said "Go."

"Out."

"Go."

"Out."

At last help came, Alexeyev got into the right car, but everyone didn't live happily ever after.

Somewhere in Columbus a Dr. Gwendoyln Carson, who was to become more mysterious a figure with each passing day, was making startling findings. Her job was to test urine samples taken from three top finishers in each of the nine weight classes. Her first tests showed unmistakable evidences of amphetamines, so she phoned Dr. Elmer Diltz, an osteopathic physician and the meet doctor. What they needed was a standard against which the tests could be measured. Dr. Diltz volunteered, took 75 milligrams of amphetamines and had his specimen tested.

These events took place a week ago Sunday. On Monday Dr. Carson made her first report. It indicated that all three flyweights medalists—a Hungarian, a Pole and a Russian—had taken massive doses of stimulants. Clarence Johnson, president of the FHI, convened a meeting of his executive committee the next morning, and it was decided to uphold Article 23, Rule 5(f), which states that any lifter found guilty of taking "dope" may be expelled, and to award the medals to the fourth-, fifth- and sixth-place finishers. By this time the tests of the bantamweights had also been completed, and two of them—a Hungarian and a Pole—were disqualified. Four more lifters were stripped of their medals in the next two days—two Poles, one Japanese and one Hungarian. From then on all tests were negative.

Many competitors, both from Communist bloc nations and elsewhere, complained that it was unjust that specimens from only the first three finishers were examined, since it was a virtual certainty that those who had been moved up also had taken stimulants. The value of taking amphetamines was also debated. Some insisted that it was an advantage. Others, such as former U.S. Olympians Tommy Kono and Iassac Berger and U.S. Coach John Terpak, said that "ups" had merely a psychological effect.

Meanwhile, the Poles, Hungarians and Russians threatened to go home, which, of course, they didn't do, since they knew they still had the three best teams in the meet; indeed, Russia, with 39 points, was the eventual winner, followed by Poland (24) and Hungary (17). Of course, they denied that they had used drugs and claimed that their food must have been doped or that stimulants had been added to the urine samples. Doctors from five countries—the above plus Bulgaria and Spain—criticized the security of the specimens, and a Polish doctor asserted that the specimens were taken in a "paper glass' and that the testing laboratory was "filthy."

These accusations were baseless. The Polish doctor wasn't even on the medical committee, had no firsthand knowledge of the testing procedures and had never seen the lab; the Spanish doctor admitted he had been coerced into signing the complaint, and the Hungarian doctor was caught administering an injection to bantamweight Imre Foldi. At least half a dozen witnesses saw the doctor giving a needle to Foldi backstage during the meet. One was Sergeant Doug Grant of the nearby Worthington police force and head of meet security. Grant and Dr. Diltz later saw the doctor inject Foldi again.

"The doctor said it was calcium for a muscle spasm," Dr. Diltz says. "I went back and 'borrowed' the vial it came from and had it tested. It was a sodium chloride solution, which is used to dilute drugs."

The security was exemplary. Dr. Diltz was the only one who knew Dr. Carson's whereabouts or phone number. There was one one key to the room where specimens were taken, and the safeguarding process was foolproof. One foreign doctor was on duty in that room each night when samples were taken in the presence of Grant and Dr. Diltz. Each sample was poured into four glass vials, the lids of which were immediately taped. The vials were placed in canisters, and a slip of paper bearing the signature of the doctor on duty was taped over the cap. Moreover, during the last few days of the meet, sealing wax was melted over the sides of the canisters and stamped with a one-of-a-kind ivory signet owned by Grant. Two canisters from each contestant's sample were placed in a refrigerator in case there was a request for retesting. The other canisters were locked in Dr. Diltz's attache case and taken to Dr. Carson's laboratory.

There the samples, which were coded by number rather than being labeled with the weight lifters' names, were tested. As for the lab itself, it is clean and well-secured. And as for those who began to wonder if there really was a Dr. Carson, let it be said that there is, and that she is a highly skilled, almost stately black woman with a Ph.D. who has been a toxicologist for 25 years and belongs to such august bodies as the International Association of Forensic Toxicologists.
mm.'m

"I tested the specimens myself and had someone else test them to check me," she said last Saturday when she finally agreed to discuss her role. Spread on a table before her were graphs showing the amounts of amphetamines found in the samples. Wavy red lines on the graphs had been drawn after the specimens had been placed in a machine called a Beckman DK-2A ratio recording ultraviolet spectrophotometer. In nine cases the red lines indicated the presence of stimulants. A number of lines went off the tops of the graphs. "One sample had to be diluted 64 times with acid water before we could get it on the chart for a reading," Dr. Carson explained. "Another had to be diluted 32 times."

Dr. Carson scotched the accusation that drugs might have been added to the samples after they had been put into the vials. "Anything added would have deviated from the standard, because it must first be metabolized by the body," she said. Added Dr. Diltz, "At no time has any doctor asked us to retest the samples in the refrigerator. To me, that says a lot."

The fuss and furor unfortunately detracted from the performances by the lifters, who set 18 world records. Two Russians—light heavyweight Gennady Ivanchecnko and middle heavyweight Vasily Kolotov—became the first ever in a world championship to earn four medals in one night, winning the press, snatch, clean-and-jerk and overall. And Alexeyev, none the worse for his misadventure in the automobile, became the first man in history to lift 500 pounds, jerking 501½ en route to amassing a 1,346½ total, which won the superheavyweight division. Serge Reding of Belgium, who barely missed a 505-pound jerk, was second and Kalevi Lahdenranta of Finland came in third. The best performances by Americans were a second for middle heavyweight Jaul Grippaldi and a third by heavyweight Bob Bednarski.

Before the championships began, there was a portent that the ceiling might fall in. When the superheavies, who were practicing on the second story of a gym, dropped their 400-pound lifts on the floor, plaster flaked off the ceiling below. All equipment was therefore transferred from the gym to a field house. In all, it took 50 men almost all night to move the 20 tons of weights and gear—and no one popped an "up."

APPENDIX 31

[From Science, June 30, 1972]

(By Nicholas Wade)

Anabolic Steroids: Doctors Denounce Them, But Athletes Aren't Listening

The scene is the auditorium of the Masonic Temple in Detroit, filled to near capacity with a turbulent audience. A brisk succession of scantily clad young men step up onto the spotlighted podium and exhibit, to music, their physical endowment. In a minute's worth of briefly held poses, each displays to best advantage his outsized arm and chest muscles, Herculean thighs, and a back that resembles a tangle of knotted ropes. The victor of this unusual modeling show will be Mr. America 1972. He can cherish the ambition of becoming Mr. Universe, an example to the world of how the human frame can be improved upon by only exercise and temperate living. Except that in recent years several Mr. America's have carried off the proud title not by their own unaided efforts, but with the help of anabolic steroids, powerful drugs that are synthetic derivatives of the male sex hormone.

Anabolic steroids feature heavily in a drug subculture that includes bodybuilders, professional footballers, and strength athletes, such as weight lifters, shot-putters, and hammer and discus throwers. Among U.S. Olympic competitors, particularly the weight lifters, consumption of anabolic steroids is probably reaching a peak this month—in a few weeks, athletes will have to lay off the drug in order to be sure of flushing all traces out of their system before the Olympic games in August. U.S. athletes will have no monopoly on steroids. Rumor has it that the drugs are widely used by South American, Russian, and European athletes. According to one member of the committee responsible for selecting the U.S. weight lifting team, victory in the Olympics has become a question of which country has the best doctors and chemists.

Just what anabolic steroids do to the human frame is a question that receives different answers from athletes, from the sports and medical establishments, and from the scientific literature. The few scientific studies that have been done are a mixed bag, some suggesting that steroids do no good for athletes, others that they are effective. The athletes who take them believe that anabolic steroids help to increase weight and muscular strength. They do so despite the warnings of sports officials and senior sports doctors, who insist that steroids do not increase muscle but do have a variety of unpleasant side effects. The American Medical Association "categorically condemns" the use of steroids by athletes. "Use of steroids is a complete waste of time and money," says Allan Ryan, team physician at the University of Wisconsin and a past president of the American College of Sports Medicine. Daniel Hanley, official doctor to the U.S. Olympic team, believes flatly that steroids have "zero effect" on muscle strength. Hanley is also a member of the International Olympics Committee medical commission, which, in a recent booklet entitled *Doping*, warned: "Anabolic steroids can severely harm the health, causing liver and bone damage, disturbances in the metabolic and sexual functions, and among women, virilization and menstrual upset."

For a drug that, according to informed medical opinion, is both ineffective and hazardous, anabolic steroids are rather widely used. Any amateur athlete caught taking a nontherapeutic drug is liable to disqualification, so most estimates of usage depend largely on anecdote and training room gossip. Between 10 and 25 percent of weight lifters use steroids, according to Russell Wright, president of the medical committee of the International Federation of Weight Lifting. But Donald Cooper, medical committee chairman of the National Collegiate Tthletic Association (NCAA), says that 80 to 90 percent of all weight lifters in the world are taking steroids. The weight of opinion seems to favor the higher estimate. Pat O'Shea, an exercise physiologist and member of the U.S. Olympic Weight Lifting Committee, told *Science*: "If we were informed we could not select an athlete taking steroids, we simply wouldn't have a team."

Reliance on anabolic steroids appears to be equally widespread among bodybuilders. John Grimek, a former Mr. America and now editor of *Muscular Development*, estimates that a preponderance—"between 99 and 101 percent"—of the entrants in the Mr. America contest held in Detroit last month were taking or had experimented with steroids. (Grimek himself believes the drugs are hazardous and offer little, if any, benefit to the physique.)

Professional footballers (about 75 percent, according to one estimate) are another group who use steroids to build up or retain body weight. Use of the drug is not confined to professionals; in Alabama, even high school coaches are rumored to advise young men to put on some weight with Dianabol in order to be considered for the football team.

Many of these users take steroids in large, sometimes massive, doses. In supervised trials, the usual dose is less than 10 milligrams per day for a 6 week course. But private users are tempted to keep on raising the dose. Some athletes are reported to take 5, 10, or 20 times the recommended amount. The most popular brand of anabolic steroid in Ciba's Dianabol, followed by Winthrop's Winstrol and Searle's Anavar. South American athletes are said to prefer stanozolol. The approved use of all these drugs is confined to treatment of debilitated patients and specific diseases such as pituitary dwarfism. The ready availability of the drugs to athletes appears to be largely through not entirely on a black market and under-the-counter basis.

Anabolic steroids have a murky history of use, which may, in part, account for the scanty interest shown in them to date by medical researchers. The first use of male steroids to improve performance is said to have been in World War II, when German troops took them before battle to enhance aggressiveness. After the war, steroids were given to the survivors of German concentration camps to rebuild body weight. The first use in athletics seems to have been by the Russians in 1954.

John D. Ziegler, a Maryland physician who was U.S. team physician to the weight lifting championships in Vienna that year, told *Science* that Soviet weight lifters were receiving doses of testosterone, a male sex hormone. The Russians were also using it on some of their women athletes, Ziegler said.

Besides its growth-promoting effect, testosterone induces male sexual development such as deepening of the voice and hirsuteness, which might account for the manifestation of such traits in Soviet women athletes during the 1950's. Present-day anabolic steroids stem from the discovery that testosterone can be chemically modified to diminish its sexual function, while preserving its growth-promoting, or anabolic, effects. Ziegler was probably the first in the United States to test the new anabolic steroids on athletes. "I thought they were great at first," Ziegler told *Science*. "I had some weigh lifters who said the Dianabol helped them a lot. But then I gave them placebos and they said it helped them the same amount." Ziegler acknowledges the remarkable effect of Dinanabol on debilitated patients, but believes that with normal people its influence is mostly psychological. He gave up experimentation with athletes when he learned that some who had taken 20 times the recommended dose had developed a liver condition. "I lost interest in fooling with IQ's of that caliber. Now it's about as widespread among these idiots as marihuana," Ziegler says. Ziegler's experiments were conducted in 1959, since when anabolic steroids have grown increasingly popular. By 1965, the drug was widely used among body-builders and weight lifters, and it now seems to have become almost universal.

University has not brought enlightenment as to the drug's effects, at least on the normal physiology. There seems little doubt that for debilitated patients the anabolic steroids afford notable gains in both weight and strength. But, like vitamins, they are not necessarily helpful in excess. What metamorphosis can the man in the street expect from anabolic steroids—will they turn him into a Hercules, as the athletes believe, or will they damage his libido and make him sing soprano, as the sports medicine publications insinuate? That the most basic facts about the drug are still in dispute is due to a combination of circumstances, of which athletes are the chief victims. The manufacturers of anabolic steroids are presumably not unaware of the drugs' market among athletes, but, because the use is not approved by the Food and Drug Administration, pharmaceutical companies neither promote anabolic steroids among athletes nor assume any responsibility for how the drugs are taken. A spokesman for Ciba, makers of Dianabol, said the company has never conducted any studies into the effect of the drug on athletes. The package insert for Dianabol warns specifically, "Anabolic steroids do not enhance athletic ability." An FDA official told *Science* that the warning was required because the manufacturers had failed to provide evidence that anabolic steroids are effective for athletes. Thus the "do not enhance" in the package warning means only "have not been proved to enhance."

Medical researchers have shown little interest in the messy task of sorting out the psychological effects of anabolic steroids on athletes from the physiological effects. As for sports organizations such as the NCAA and the Amateur Athletic Union (AAU), the use of any drug is contrary to their ethos, and official attitudes range from reluctance to discuss the issue to an outright denial that the drugs are efficacious.

Such controlled studies as there are, most of them conducted by team physicians or physical educators, do little to resolve the salient issues of steroid efficacy. A recent double-blind study by S. W. Casner, former team physician at the University of Texas, indicated that an anabolic steroid caused subjects to put on weight but that the weight gain, Casner and his colleagues inferred, was in the form of retained water, not extra muscle[1] (the steroid used was stanozolol).

The most extensive series of experiments with anabolic steroids had been conducted by O'Shea and his colleagues at Oregon State University. In a 1969 study with Dianabol, O'Shea found that treated subjects gained significantly in weight and strength over matched controls.[2] (Crucial to O'Shea's treatment is that the athletes are fed a high protein diet and are made to train intensively during the anabolic treatment.) The design of this study has been criticized because athletes knew whether or not they were receiving steroids. O'Shea has now repeated the study according to a double-blind design with essentially the same results.[3] After a 4-week course of 10 mg of Dianabol per day, treated subjects increased their body weight by 5 percent (untreated controls gained less than 1 percent). The weight gain was presumably in the form of muscle, since the subjects, who were trained weight lifters, increased their weight-lifting ability b yan average of 18 percent. It seems not unreasonable to infer, O'Shea concludes, "that a nutritional and physiological basis exists for the use of anabolic steroid agents for the purpose of improving physical performance."

With the moderate doses he used in these studies, O'Shea has observed no sexual effects, and the subjects reported no reduction in sexual appetite. (Paradoxically, administration of male sex hormone tends to reduce sexual drive by activating a hormonal counter-response.) The only side effect that turned up in O'Shea's studies is muscle cramps, which can be overcome by magnesium tablets. The long-term effect of moderate doses, if any, is unknown.

Excessive doses of anabolic steroids are likely to result in the liver and bone damage described in the Olympic committee's antidoping booklet. Other unpleasant effects include shrinkage of the testicles and swelling of the prostate gland. These symptoms seem partly or wholly reversible. Those who believe steroids help an athlete put on muscle say that about a third of the extra muscle is lost when steroid treatment is stopped. One effect that is not reversible is in young boys; the drugs cause premature ossification of the long bones and may, in certain cases, stunt growth. O'Shea believes anabolic steroids should not be taken under the age of 22, and in any case only after careful medical evaluation. But he dismisses as "scare tactics" the warnings put out by the medical committee of the NCAA.

In O'Shea's hands, anabolic steroids are both effective (at least with weight lifters) and free of side effects (apart from muscle cramps), while in the studies cited by official sports doctors the drugs are inefficacious.

O'Shea studies clearly need to be repeated by others before the efficacy of anabolic steroids can be proved or disproved. It would probably require a clear disproof, or discovery of a particularly damaging side effect, to shake athletes from their attachment to steroids. Even if the drugs gave only a fractional boost to performance, this might make the difference between winning an event or breaking a record. The steroids are also said to induce a feeling of well-being, which alone would guarantee a measure of popularity.

Opinions on the efficacy of anabolic steroids tend to run parallel with respective positions on ethics. Official athletic organizations such as the Olympics committee, the NCAA and the AAU, all of which exist to serve the ideal of the amateur in sports, state flatly that the use of any drug for a nontherapeutic purpose is unethical. In weight lifting and body-building, which have always been more players' sports than gentlemen's, the athletes see a distinction between steroids, which may be taken weeks before an event, and drugs such as amphetamines, which affect performance more instantaneously. Steroids, they say, are fair play.

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[1] S. W. Casner, R. G. Early, B. R. Carlson, *J. Sports Med. Phys. Fitness* 11, 98 (1971).

[2] L. C. Johnson and J. P. O'Shea, *Science*, 164, 957 (1969).

[3] J. P. O'Shea, *Nutr. Rep. Int.* 4, 363 (1971).

The ethics issue is likely to remain an academic point until a pratical test is developed to ascertain whether an athlete has been taking steroids. Steroids, in any case, are part of a larger phenomenon, which some describe as faddism, others as a special drug culture, among athletes. Bill bates, former head trainer of the New England Patriots, dismisses steroids as "just another example of faddism among athletes, like ice massage, isokinetics, brewer's yeast or vitamins." But Bill St. John, a Mr. America finalist of Glassboro, N.J., says of steroids and other drugs used by athletes, "It's crazy the way some of these guys abuse these medicines—it's like a real drug culture we live in." Athletics has certainly not remained entirely free of the drug culture in society at large. Last fall, for example, a spot check of the Delaware State University football team revealed that about a fifth of the players had been taking drugs, including LSD, amphetamines, barbiturates, and heroin. Among professional footballers, the use of amphetamines is rife—the drugs are sometimes put out in the training room, according to Bates—and there are rumors that cocaine is taken too. Amphetamines have also been popular among weight lifters, at least until the National Championships in Columbus, Ohio, last year. Holders of the top six places had to be disqualified after the event, when analysis of urine samples revealed that all had taken Dexedrine. A drug problem of a different nature, affecting professional footballers, is the use of pain killers such as novocaine to enable a player to continue playing even when injured. Vince Lombardi, for example, took the line that no player was ever injured—"A man would have to have a bone sticking out of his skin for Lombardi to let him off," says one football trainer.

Though amphetamines and steroids are taken primarily in the belief that they will improve performance, both drugs impart a psychological kick and to this extent are no different from heroin, marihuana, and the drugs used by society at large. That athletes, the supposed exemplars of clean living and respect for their own physiology, should be so deep into drugs is presumably a consequence, at least in part, of the pressures to which they are subjected.

In professional football, the advent of big gates and superstars has led some managers to use any means available to keep a player on the field. In athletics, the unceasing upward march of world records has compelled trainers to demand more and harder training schedules of their athletes. Swimmers may be required to swim 5,000 yards a day, long- and middle-distance runners to run 150 miles a week. "You can't ask this of these guys and expect them to submit to the average man's diet," says O'Shea. "At every meet you go to you see world records broken in one class or another. How far can you go before something gives way?" asks St. John. If athletics is already approaching the limits of normal physiology, it is maybe inevitable that athletes will turn to artificial means to coax the last twitch of energy out of a fatigued muscle or to improve upon the masculinity of potential Mr. Americas. But the gentlemen who set the rules seem happier denouncing steroids than trying to understand the trials and temptations that push today's athletes into drugs.

APPENDIX 32

[From Newsweek, December 29, 1969]

BREAKFAST OF CHAMPIONS

It is scarcely a secret that today's sports stars sometimes use drugs to augment their natural strength, stamina and skill. Pep pills allegedly have helped shave split seconds off the 100-yard dash and add feet to the javelin throw. And a shot of Novocain has helped many a quarterback return to the game despite a torn muscle. At the Bavarian Sports Physicians Conference in Munich last week, doctors from many parts of Europe debated the use of the most exotic—and possibly dangerous—performance booster of all: male hormones.

What put the matter on the conference agenda was an article in Die Zeit three weeks ago by Brigitte Berendonk, a high-ranking West German discus thrower and shot-putter. "The hormone pill or shot," the 27-year-old star asserted, "is as much a part of modern competitive sport as the training program and the tricot sweat suit." According to Miss Berendonk, nearly all the world-class decathlon competitors, most discus throwers, shot-putters and weight lifters, and half the runners and jumpers use hormones. Reportedly, American decathlon champions Bill Toomey and Russ Hodge, as well as Swedish discus-thrower Ricky Bruch, have swallowed hormone pills along with their training breakfasts. All Oerter, four-time U.S. Olympic discus champion, while hedging on whether he has used hormones himself, observed: "The practice is now so widespread that the younger guys who are just starting out have no choice if they want to stay on top."

Muscle: The drugs in question are "anabolic steroids," synthetic forms of testosterone and other male hormones. Such drugs tend to add tissue to the body and normally are prescribed by physicians to increase the weight and strength of men debilitated by age or long-term illness. Athletes say that the drugs augment the development of muscle tissue during training and increase strength. Dr. Manfred Steinbach of the University of Mainz reported that some persons taking the drugs show a 2 per cent increase in weight, a 4 per cent increase in the size of their biceps and a 3½ per cent gain in leg circumference.

But apart from whether the use of hormones is in keeping with the precepts of good sportsmanship, many of the physicians at the meeting were concerned about whether it is safe. In teen-agers, the hormones can prematurely stop bone growth, preventing the attainment of full stature. For women who take them, the drugs pose the hazard of virilization: the development of facial hair, a deepening voice and change in the menstrual cycle.

Damage: "The extra hormones at an early age," said Dr. Ingeborg Bausenwein, a Nuremberg physician and former Olympic javelin thrower, "could create irreversible damage." Moreover, some doctors are convinced that the hormones are overrated as a means of improving athletic performance. "The idea of their increasing strength," said Dr. Konrad Schwarz, a Munich endocrinologist, "is more psychological than physical."

Whatever the merits or dangers of the male hormones, most physicians at the meeting agreed that it would be difficult to police their use. Miss Berendonk, a doctor's daughter who disclaims the use of male hormones, suggested that medical experts could spot-check athletes in their hometowns to look for evidence of "hormone doping." But such tests, according to one doctor, "would turn sports into an organic-chemistry internship."

Some of the doctors at the meeting concluded that the use of male hormones should be discouraged on the ground of pure sportsmanship. "We need to clarify that sport, even the top sport, should contribute to health," said Dr. George F. Schlichenrieder, physician for the German Olympic hockey and cross-country ski teams, "and not be used for breaking records alone."

(C) Glossary of Terms and Drug Bibliography Relating to the Use and Abuse of Drugs by Athletes

(Drug Abuse Research and Education, Los Angeles, Ca., pp. 1–12)

APPENDIX 1

Drug Abuse Research and Education Presents Glossary of Slang Terms Associated With Today's Youth and Their Drugs of Abuse

(Drug Abuse Research and Education, Los Angeles, Calif., pp. 1–12)

Apapulco Gold—A form of marijuana.
Acid—LSD, lysergic acid diethylamide.
Acid head—LSD user.
Amping; over amping—See "O.D."
(Where Its)—Where (drug) action is taking place.
Babysit—To guide a person through his drug experience.
Backwards—Term applied to tranqualizers.
Bag—A container of drugs.
(Finding Your) Bag—See "Doing Your Thing."
Balloon—Rubber toy balloon used for storing or delivering narcotics, usually capped heroin in bulk form but occasionally papered or capped.
Barbs—Barbituates.
Bennies; Beans—Amphetamines (benzadrine).

Bindle—A small paper jacket of heroin, morphine, cocaine or methedrine.

Blast; Blow—To smoke a marijuana cigarette.

Blow Your Mind—To get high or on drugs.

Blue Bands—(Pentobarbital Sodium).

Blue Cheer—Type of LSD.

Blue Birds; Blue Devils; Blue Heaven; Blues—Amobarbital capsules (Amytal; Amobarbital Sodium).

Bogart (from Humphrey Bogart)—To "Bogart a joint" is either to salivate on or to retain (and not pass around) a marijuana cigarette.

Bombed—Intoxicated on drugs.

Boo—Cannabis.

Booster—Consumption or injection of additional dosage to continue or prolong a "trip."

Bottle Dealer—A person who sells drugs in 1000 tablet or capsule bottles.

Bread—Money.

Brick—Kilo of marijuana in compressed brick form.

Bridge—See "Crutch"—usually alligator clamp or like device used to hold marijuana cigarette while smoking same.

Bummer; Bum Trip—A "bad trip"—See "freak trip," "freak out."

Burn—To accept money and give no drug in return, or to give a substance in lieu of the drug; also, to burn the skin when injecting.

Burned—Used to describe the acquisition of bad drugs, diluted drugs, or no drugs at all.

Button—Peyote buttons (containing the psychedelic, mescaline).

Buy—To purchase drugs.

Can—One ounce of marijuana. Term derived from tobacco can in which marijuana was commonly sold in the past. Now, it is more frequently sold in small plastic or paper bags.

Candy—Barbituates.

Cap—Capsule containing a drug; commonly a number 5 capsule.

Cargo—Load of supply of narcotics or drugs.

Carrying—In possession of a drug.

Cartwheel—Amphetamine tablet (round, white, double scored).

Cents—C.C.'s—cubic centimeter.

Chalk—Methamphetamine.

Chicken Powder—Amphetamine powder for injection.

Chip; Chippy; Chipper—To play around with a drug; to use drugs sporadically.

Christmas Tree—Tuinal.

Clean—To remove stems and seeds from marijuana; also, refers to an addict who is free from needle injection marks; also, not holding or possessing any narcotics.

Cocktail—A regular cigarette into one end of which a partially smoked marijuana cigarette is inserted so as to waste none of the drug.

Coke—Cocaine.

Cold Turkey—Trying to break the habit. "Kicking it cold turkey" is breaking the habit of addictive drug use at home, in prison, etc., without the aid of any medication or medical care.

Come Down—To come off of drugs.

Connect—To buy drugs.

Connection—Refers to the peddler or source of supply for the user.

Contact High—A feeling of being on drugs or "high" from merely being in contact with someone or something reminding one of drugs.

Cooker—Bottle cap for heating drug powder with water.

Cool—See "groovy."

Co-Pilots—Amphetamines.

Cop, To Cop—To get drugs.

Cope—To handle oneself effectively while under the influence of drugs.

Crash—To end a drug experience, particularly from an amphetamine like methedrine.

Crash Pad—Temporary residence, usually for a night or two, usually communal, often used to end a drug experience.

Crazy—Exciting, in the know, enjoyable.

Crutch—Device used to hold marijuana cigarette when it has burned to the point where it will burn the fingers—usually a half of a paper match book. Also, a container for a hypodermic needle.

Crystal—Methedrine (methamphetamine), "speed," or other amphetamine.

Crystals—Amphetamine powder for injection.

Cube—Sugar cube impregnated with LSD.

Cut—To dilute a powder with milk, sugar, baking powder, etc.

"D"—LSD.

Dealer—A drug peddler.

Dexies—Dextroamphetamine sulfate. or Amphetamine tablets, a mixture of barbiturate and amphetamine.

DMT—Dimethyltryptamine, a psychedelic nicknamed "the businessman's LSD."

Dime or Dime Bag—Ten dollars' worth of drugs.

Deuce Bag—A two-dollar container of a drug.

Doing—May be an "happening"; but specifically the taking of a drug.

Doing Your Thing—Doing what seems best to you; finding your "bag."

Dope—Any drug.

Doper—Drug user.

Dotting—Placing LSD on a sugar cube.

Double Cross—Amphetamine tablets (double scored).

Downer—A depressant drug such as a barbiturate or tranquilizer; also a "bum trip"; also, to come off of drugs.

Dreamer—One who takes opiates or morphine.

Fat—Describing someone who has a good supply of drugs.

Fine Stuff—Drugs of unusually good quality, only slightly adulterated.

Fit; Outfit—Equipment for injecting drugs.

Fix—To inject drugs or one dose of a particular drug—also "Outfit."

Flash—The intense feeling the user has just after "fixing"; to throw up after "fixing."

Flashback—Reoccurrence of the drug reaction, from LSD weeks to months later without taking the drug again.

Flush—The initial feeling the user gets when injecting a drug like methamphmetamine.

Footballs—Amphetamines (oval shaped).

Forwards—Pep pills, especially amphetamines.

Frantic—Nervous, jittery drug user.

Freak—One who has flipped, i.e., one who uses drugs to the point of loss of reality; especially used as "speed freak" referring to a heavy methedrine user.

Freak Out—To lose all contact with reality; to have a drug party.

Freak Trip—Adverse drug reaction, especially with LSD.

Fuzz—The law.

Garbage—Poor quality drugs.

Geeze—Injection of drugs.

Go—To participate freely in the drug scene.

Good Go—A good or reliable dealer in drugs.

Goof Balls—Barbiturates; any barbiturate tablet or capsule, may be combined with an amphetamine.

Goofer—One who uses pills.

Goofed Up—Under the influence of barbiturates.

Going Up—Taking drugs for their effects; said of smoking cannabis or injecting "speed," etc.

Giggle-Smoke—Cannabis, or cannabis smoke.

Grass—Marijuana in the raw state, such as leaves, stems, seeds.

Grasshopper—Marijuana user.

Grass Brownies—Cookies containing cannabis.

Groovy—Good; "out of sight."

Griffo—Cannabis.

Guide—One who "babysits" with a novice when he goes up on a psychedelic substance.

Gun—See, "Outfit."

H.—Heroin.

Habit—Physically or psychologically dependent on drugs; addiction to drugs.

Hallucinogens—See psychedelics.

Hand-to-Hand—Delivery of narcotics person-to-person.

Hash, Hashish—Resin from the Cannabis Indica plant which contains a very high tetrahydrocannabinol content.

Hashbury—Haight-Ashbury, District of San Francisco.

Head—Chronic user of a drug or drugs.

Hearts—Amphetamines, specifically dextroamphetamine and benzedrine sulfate; also dexedrine (orange colored, heart shaped tablets).

Heat—A Police Officer—the law.

Heavy—Significant, weighty; highly emotional.

High—Under the influence of a drug, usually a stimulant. A drug user who is "up."

Hit—One dose of a particular drug.

Hog—A drug user who takes all of a drug he can get his hands on.

Holding—Possessing narcotics.

Hooked—Addicted: a confirmed addict.

Horning (Snorting, Sniffing)— Sniffing narcotics through nasal passages.

Hype—One who uses intravenous drugs, specifically heroin or "speed."

Hype Outfit—Equipment for injecting drugs.

Ice Cream Habit—Sporadic use of drugs.

J or Jay—"Joint" or marijuana cigarette.

Jar Dealer—A person who sells drugs in 1000 tablet or capsule bottles.

Joint—A marijuana cigarette.

Jolt—An injection of narcotics.

Joy Pop—Intermittent (rather than continuous) injection of one dose of a drug; also one who is "joy popping" only takes an injection now and then.

Jug—1000 tablet or capsule bottle.

Junk—Heroin.

Kee—Kilo.

Keg—25,000 Amphetamine capsules or tablets, or more.

Kick, Kicking—To stop using drugs (see "cold turkey").

Kicks—A drug experience.

Kilo—2.2 pounds.

Kit—Same as "Outfit" or narcotic paraphernalia.

"L."—LSD.

Lab—Equipment used to manufacture drugs illegally.

Laid Out—Being informed on.

Lame—Not very smart, dumb, or green, not street wise.

Lean—A non-drug user.

Lid—See "Can."

Loaded—High on drugs; under the influence of drugs.

Magic Mushroom—The Mexican species of mushroom, containing psilocybin, a psychedelic.

Main-Line—Veins of body, usually arms; also intravenous injection.

Main-Liner—One who injects narcotics directly into the veins, intravenously.

Make-It—To buy narcotics; to leave the scene, area.

Man (The)—The law; or a connection (drug supplier).

Manicure—Prepare marjuana for use in cigarettes—remoring seeds and stems.

Mary Jane—Marijuana—an old term, rarely used.

Matchbox—A small amount of cannabis sufficient to make between five to eight ciragettes; about a fifth of a lid.

MDA—A hallucinogen, methyl-3, 3-methylenedioxyphenethylamine.

Mellow Yellow—Refers to smoking banana skins, a hoax as they contain no mind altering drugs.

Mickey— Mickey Finn—Chloral Hydrate.

Mind Blower—Pure, unadulterated drugs.

Mahasky: Mu: Muggles—Cannabis.

Mota—Marijuana.

Mule—A person who delivers or carries a drug for dealer.

Narcotic—Refers to the natural and synthetic derivatives of opium (morphine, heroin, codeine); not a synonym for drugs.

Nark—Narcotics Agent.

Needle—Hypodermic needle.

Nickle Buy—A $5.00 (five dollar) purchase.

Number—A joint.

O.D.—Overdose of drugs, usually heroin.

Ope—Opium.

Out of It—Not in contact, not part of the drug scene.

Out of Sight—Good; groovy; a positive descriptive term.

Outfit; Fit—Equipment for injection by hypodermic method; a "hype" outfit—eyedropper and needle, spoon pacifier, etc.

Owsley's Acid—LSD purportedly illegally manufactured by Augustus Owsley Stanley III, also infers that it is good quality LSD.

Oz—Ounce—Refers to ounce of narcotics, usually heroin or meth.

Panama Red—A potent type of South American cannabis.

Panic—Refers to condition when the drug supply has been cut off (usually caused by the arrest of a big peddler); a scarcity of drugs.

Paper—A container of drugs.

Peace Pill; P.C.P.—Refers to the drug phencyclidine, originally an anesthetic for dogs.

Per—A prescription.

Pez—Pez candies impregnated with LSD.

Piece—A pistol, revolver.

Pig—See "Hog."

Pill Head; Pill Freak; Pilly—Amphetamine or barbiturate user.

Poke—A puff on a "joint."

Point—Hypodermic needle.

Pop—A subcutaneous injection, usually referred to as "skin poppin."

Popper—Amyl Nitrate in ampule form, inhaled.

Pot; Pothead—Marijuana (user).

Pot Likker—Cannabis tea, usually made with regular tea boiled with cannabis leaves.

Powder—Amphetamine powder.

Psychedelic—Means a drug whose actions primarily effect the mind; i.e., "mind-manifesting" (LSD, marijuana, etc.).

Pusher—Drug peddler to users; one who seeks more business from regular customers.

Put Down—Stop taking (drugs).

Quarter—Quarter of an ounce of either heroin or meth., usually 4 to 8 grams.

Rainbows—Tuinal (Amobarbital Sodium and Secobarbital Sodium).

Red; Reds; Red Birds; Red Devils—Seconal (Secobarbital Sodium).

Reds & Blues—Tuinal (Amobarbital Sodium and Secobarbital Sodium).

Reefer—Marijuana cigarette.

Register—To wait until blood comes into the "hypodermic" before injecting a drug intravenously.

Righteous—Good quality drugs.

Rip Off—To forcibly rob a peddler of his drugs or money.

Roach—Small butt of marijuana cigarette.

Roll, Roll Deck—A tin foil wrapped roll of tablets.

Roll Dealer—A person who sells tablets in rolls.

Run—To take drugs continuously for at least three days.

Rush—See "Flash."

Score, Scoring—Make a drug purchase.

Script—Drug prescription.

Shooting Gallery—Place where users can purchase drugs and inject them. Place where an injection of drug can be used and/or bought.

Shoot Up—To inject drugs.

Shot—An injection of a drug.

Skin popping—Intradermal or subcutaneous injection.

Sleepers—A depressant type drug such as barbiturates.

Smack—Heroin.

Smashed—Intoxicated, "stoned," "high."

Sniffing; Snorting (Horning)—Using narcotics by sniffing through nasal passages, usually heroin or cocaine.

Snitch—Informer, stoolie.

Snow—Cocaine.

Snowbird—Cocaine user.

Source—Where narcotics are obtained; supplier, such as pusher, dealer, connection.

Space Out; Spaced—In a daze, particularly a daze resulting from a trip due to use of drugs.

Spatz—Capsules.

Speed—Methedrine (methamphetamine) or crystal; now broadened use in some areas to mean any amphetamine or any stimulant.

Speed Freaks—See "Freak."

Speedball—A powerful shot of a drug, usually heroin and cocaine combined.

Spike—Hypodermic needle.

Split—To leave, flee, break up with.

Splash—Speed.

Spoon—A quantity of heroin, theoretically measured on a teaspoon (usually between 1 and 2 grams), 16 spoons per ounce.

Square—A person who does not know what's happening—a nonuser.

Stanley's Stuff—LSD purportedly manufactured by Augustus Owsley Stanley III. See "Owsley's Acid."

Stash—Place where narcotic or "outfit" is hidden; also refers to one's own supply of drugs.

Stoned—Under the influence of drugs.

Stoolie—Informer, see "Snitch."

STP—Serenity, Tranquility, Peace—a drug mixture of methdrine and psychedelic compounds (4-Methyl 2, 5 Dimethoxy Alpha Methyl Phenethylamine), DOM-hallucinogenic drug.

Straight (Teen Meaning)—(1) Under the influence of narcotics; (2) Applied to a peddler—gives a good deal.

Strung Out—Heavily addicted or hooked.

Stuff—General term for drugs and narcotics.

Syndicate Acid—STP.

Taste—A small sample of a narcotic.

TD Caps—Time disintegrating capsules.

Tea—Cannabis, marijuana.

Toke Up—To light a marijuana cigarette.

Torn Up—Intoxicated, stoned.

Tracks—A series of puncture wounds in the veins, caused by continued narcotic injections.

Travel Agent—A pusher of hallucinogenic drugs.

Trey—A $3.00 (three dollar) purchase.

Trigger—To smoke a marijuana cigarette immediately after taking LSD.

Trip—The hallucinations and/or feelings experienced by a person after taking a drug, particularly LSD.

Turn On—To use drugs, or to introduce another person to the use of drugs.

"Turn On, Tune In, Drop Out"—Take LSD, learn about the "real" world and drop out of the non-drugged world.

Upper—Amphetamine.

Up Tight—Angry; anxious; (may rarely also be used to mean good, as in the words to a song "Everything's up tight, out of sight").

User—One who uses drugs.

Vibes, Vibrations—Feelings coming from another; may be "good" or "bad" vibes.

Wasted—High or drunk.

Wedges—Small tablets of wedge (almost triangular) shape.

Weed—Marijuana.

Weed Head—Marijuana smoker.

Weekend Habit—Irregular drug habit.

Weird—On drug.

West Coast Turn-Arounds—Amphetamine tablets or capsules.

Wheels—Car, automobile.

Whites—Amphetamine tablets.

Wig Out; Wigging—See "Blow Your Mind."

Works—Equipment for injecting drugs.

Yellow Jackets, Yellows—Nembutal (Pentebarbital Sodium).

Appendix 2

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GLOSSARY OF TERMS SPECIFYING UPPER AND DOWNERS[1]

Abscess.—Infected injection site.

Amphetamines.—Bennies, Co-Pilots, Dexies, Dynamites, Eye-Openers, Hearts, Lid Proppers, Marathons, Peaches, Pep Pills, Roses, Truck Drivers, Wake-Ups,

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[1] The glossary is designed to acquaint readers with the street jargon relating to drugs. The list is incomplete, for the terms above refer primarily to stimulants and depressants. The use of the words varies from town to town and from one day to the next. However, knowledge of the slang helps facilitate communication on this subject.

Cartwheels, Footballs, Greenies, Crystal, Meth, Crank, Crink, Cris, Christian, Speed, Bombidos, Bottles, Amped, Jugs, Cross Tops.

Baggie.—Used as package for various powders and grass.

Ball.—Absorption of stimulants and cocaine via the genitalia.

Balloon.—Used as package for heroin.

Bang.—Injection of drugs.

Barbiturate.—Barbs, Candies, Peanuts, Pills, Purple Hearts, Sleeping Pills, Softballs, Blues, Blue Birds, Blue Bullets, Blue Devils, Blue Dolls, Blue Heaven, Double Trouble, Blue Tips, Rainbows, Reds and Blue, Nimbies, Yellows, Yellow Bullets, Yellow Jackets, Pinks, Reds, Red Birds, Red Bullets, Red Devils, Seccies, Seggies, Phennies.

Barbs.—Barbiturate drugs.

Bent.—High or intoxicated from a drug.

Bindle.—Packet of narcotics.

Blow.—To inhale heroin or cocaine through the nose.

Bombita.—Amphetamine injections, sometimes taken with heroin.

Boot.—To prolong the injection by advancing the plunger slowly.

Bottles.—Injectable methamphetamines.

Browns.—Long acting amphetamines.

Bum Out.—Refers to downer experience.

Candy.—Cocaine.

Candy Man.—Seller of drugs.

Chipping.—Taking narcotics occasionally.

Christian.—Methamphetamine.

Cocaine.—Bernice, C, Candy, Carry Nation, Cecil, Chalk, Coke Coconuts, Corrine, Dust, Flake, Frisky Powder, Sniff, Snow, White Powder.

Cokie.—Cocaine addict.

Cold Turkey.—Sudden withdrawal of drugs (from the gooseflesh, which resembles the skin of a cold plucked turkey) without benefit of medication.

Cook.—To heat the drug mixture to dissolve.

Cop.—To buy.

Crash.—To recover from a high to a normal state; also, to sleep or sleep off effects of drug.

Crystal. Methamphetamine.

Cut.—Dilute drugs by adding milk sugar or another inert substance.

Deck.—Packet of narcotics.

Downers.—Sedatives, alcohol, tranquilizers, and narcotics.

Dried Out.—Detoxified, withdrawn from a drug.

Dummy.—Equipment for injection.

Dynamite.—Term used to indicate quality—if it's dynamite you know it's really good stuff.

Edge.—Unpleasant effects of stimulants "edgy"—nervousness.

Fix.—Injection of narcotics.

Flash.—A feeling of excitement or pleasure; a quick jolt felt in the abdomen as the injected drug enters the blood stream.

Freak.—A person may be termed a "downer freak" or "upper freak" if they limit themselves to one of these drug experiences.

Garbage.—Weak, heavily diluted heroin.

Gee.—Intravenous injection.

H.—Heroin.

Habit.—Being physically dependent upon a drug.

Hard Narcotics.—Opiates, such as heroin and morphine.

Hard Stuff.—Heroin.

Head.—One who refers all drug effects to how it affects thinking, delusions, hallucinations.

Heroin.—Boy, Caballo, Corga, Doojee, H, Hairy, Harry, Horse, JeeGee, Joy Powder, JoJee, Junk, Smack, Schmack, Schmeck, ———, Scott, Scag, Skot, Tecata, White Stuff, Dope.

Hit.—A single dose of a drug.

Honeymoon Stage.—Period when a heroin user is not yet dependent on the drug.

Hophead.—A drug dependent person.

Horse.—Heroin.

Hot Shot.—An injection of an impure drug or one of too high a dose.

Hustle.—From the perspective of an outsider or street person, everybody has a "hustle", i.e., their particular variety of behaviors designed to get what they want or need.

Icecream Man.—A seller of opium.

Jolly Beans.—Pep pills.

Jones.—Habit or addiction; heroin habit.

Joy-Pop.—Inject narcotics irregularly.

Jugs.—Injectable methamphetamines.

Juice.—Hard liquor.

Juicer.—One who prefers alcohol.

Junkie.—Heroin addict; a seller of drugs.

Kick.—A feeling of excitement or pleasure.

L.A.—Long-acting amphetamines.

Layout.—Equipment for injecting drug; or outfit.

Lemonade.—Poor quality heroin.

M.—Morphine.

Machine.—Syringe, needle, bottle cap, and cotton swab for injections.

Mainline.—Vein; to inject into a vein.

Meth.—Methamphetamine.

Methadone.—Dolly.

Methamphetamines.—Crank, Crink, Cris, Christian, Meth, Bombidos, Bottles, Jugs, Crystals, Speed, Amped.

Meth Freak.—A frequent user of methamphetamine.

Meth Head.—A frequent user of methamphetamine.

Meth Monster.—A frequent user of methamphetamine.

Mixing.—Using uppers and downers one after the other.

Morphine.—Dope, Hard Stuff, Hocus, Mary Ann, Miss Emma, MoJo Morpho, White Stuff.

O.D.—an overdose.

On the Nod—Sleepy from narcotics.

Over Amped.—Extremely high dose of stimulant.

Pill Head.—Heavy user of pills, barbiturates or amphetamines or both.

Pill Popper.—Persons who use pills.

Purple Hearts.—A combination of dextroamphetamine and amobarbital (from the shape and color).

Quill.—A matchbook cover for sniffing methamphetamine, cocaine, or heroin.

Rainbows.—Amobarbital and Secobarbital combination in a blue and red capsule.

Reds or Red Devils.—Secobarbital capsules.

Ripped.—Synonymous with being under the effects of drug.

Rip Off.—Some one who will take advantage of you; Stealer; synonymous with Barb Freak or Downer Freak; to steal.

Run.—A period of addiction, as in "I had a year run."

Rush.—The feeling when an infected drug enters the blood stream.

Scoop.—A makeshift object from which to sniff cocaine or heroin (matchbook).

Shooting Gallery.—Place where addicts inject.

Skin Pop.—To inject drugs under the skin.

Snort.—Inhale drugs.

Snow.—Cocaine.

Speedball.—An injection of a stimulant and a depressant, originally heroin and cocaine.

Speed Freak.—Persons who use amphetamines frequently.

Spoon.—A measure of heroin, or coke, cocaine (1/16 ounce).

Strung Out.—Addicted.

Stuff.—Narcotics, usually heroin.

Switching.—Changing preference from one drug, or a person or sexual behavior, etc., to another.

Tracks.—Scars along veins after many injections.

Tree.—Tuinals, a moderately long-lasting rapidly effective sedative.

Turnabouts.—Long-acting amphetamines.

Turps.—Elixir of Terpin Hydrate with Codeine, a cough syrup.

Uppers.—Stimulants, cocaine, and psychedelics.

Wasted.—The drug effect has taken over ego functions or even autonomous body functions.

Works.—Syringe, needle, bottle cap, and cotton swab for injections.

Yellow Jacket.—Barbiturate in a yellow capsule.

Yen Sleep.—A drowsy, restless state during the withdrawal period.

Zapped or zonked.—The effects of a drug—could be either upper or downer.

APPENDIX 3

[Drug Education Bibliography, The National Coordinating Council on Drug Education, 1971, pages 25–27]

STIMULANTS

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APPENDIX 5

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1973

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APPENDIX 6

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"Sport is a matching of two or more peers to determine who can best perform certain physical feats. For sport to be of interest, to have emotional impact, to be an artistic or a commercial success, the contestants must be as equal as possible. None should be allowed an artificial advantage over the others and just as important all suspicion of such advantage should be eliminated."

—Bil Gilbert, writer in *Sports Illustrated*.

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